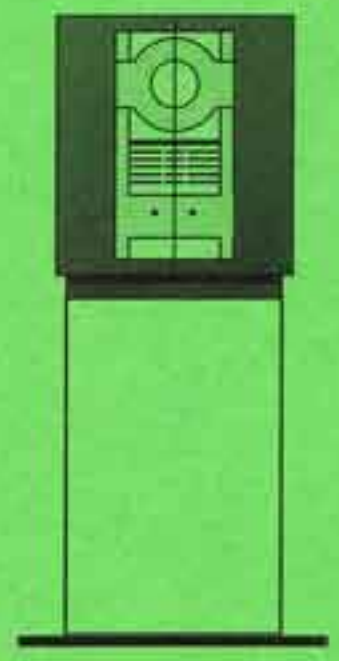
Bang & Olufsen

BeoSound Ouverture

Type 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640



SERVICE MANUAL

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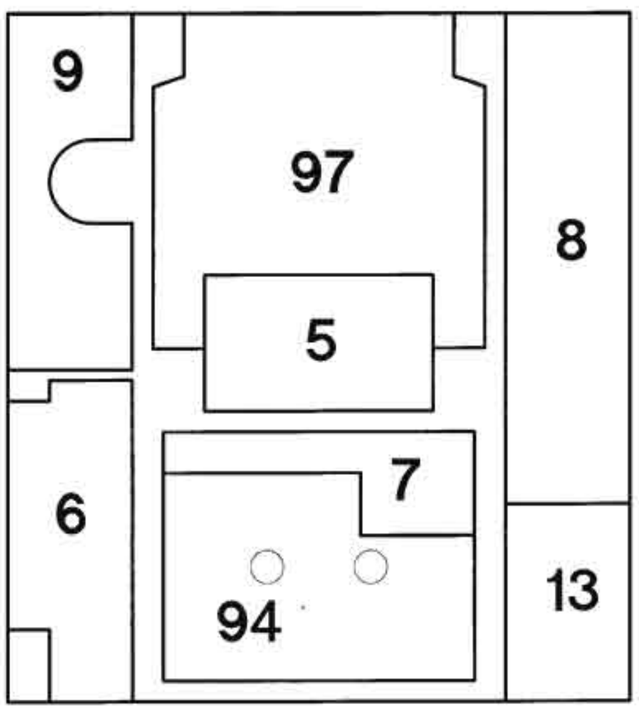
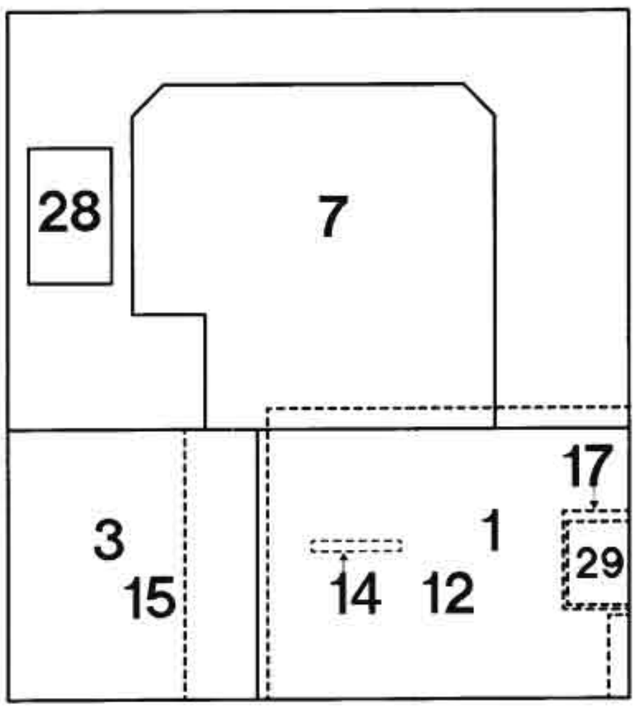




1 - 2
SPECIFICATION GUIDELINES

SPECIFICATION GUIDELINES FOR SERVICE USE

BeoSound Ouverture

With FM and AM range and RDS	Type 2631 (EU), 2632 (GB), 2633 (USA-CDN),
	2634 (JAP), 2635 (AUS)
With FM and AM range	Type 2636 (EU), 2637 (GB), 2638 (USA-CDN),
	2639 (JAP), 2640 (AUS)
Operation	Direct keypad
Recommended terminal	Beo4
	Beolink 1000
Finish	Black, aluminium, light grey

Preamplifier section

Total harmonic distortion IHF	< 0.1%/1 kHz
Response vs. frequency:	
AUX in	20-20,000 Hz ± 1 dB
Input sensitivity/impedance:	
AUX	200 mV
Input impedanc, AUX	> 22 kΩ
Max. input signal, AUX	2.0 V
Signal-to-noise ratio:	
AUX, A-weighted	> 80 dB
Channel separation 10 kHz, AUX	> 60 dB
Bass control at 100 Hz	±9 dB
Treble control at 10 kHz	±9 dB
Output:	
Headphones	4.1 V / 235 Ω

Tuner, FM section

FM range	87.5-108 MHz
	76-90 MHz f. Type 2634, 2639
FM aerial impedance	75 Ω
Usable sensitivity mono	14 dBf - 1.4µV
Usable sensitivity stereo	19 dBf - 2.5µV
50 dB quieting sensitivity mono	21 dBf - 2.5µV
50 dB quieting sensitivity stereo	40 dBf - 28µV
Signal-to-noise ratio 65 dBf mono	73 dB
Signal-to noise ratio 65 dBf stereo	66 dB
Frequency response	30-15,000 Hz +1/-3 dB
Distortion at 65 dBf mono	0.3%
Distortion at 65 dBf stereo	0.3%
Intermodulation mono	0.1%
Intermodulation stereo	0.1%
Stereo channel separation	40 dB
Subcarrier product rejection	50 dB, stereo

Tuner, AM section

AM range	LW 150-279 kHz
	MW 520-1610 kHz
LW sensitivity 20 dB S/N ratio	80 → 72dBµV/m (10 → 4mV/m)
MW sensitivity 20 dB S/N ratio	68 → 60 dBµV/m (2.5 → 1mV/m)
Number of programmes	30

1 - 2
SPECIFICATION GUIDELINES

Tape recorder section

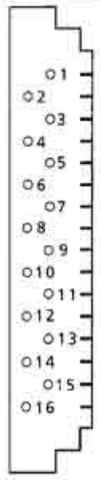
Compact cassette	C46-C120
Tape recording system	HX PRO
Tape transport	Auto Reverse
Search system	Auto Track
Record level	Auto Record Level
Noise reduction	Dolby B
Tape switch	Auto ferro/chrome/metal
Tape head	Amorphous
Wow and flutter, DIN	< 0.15%
Wow and flutter, WRMS	< 0.09%
Speed deviation	< ±1.5%
Fast forward and rewind	95 sec./C60
Frequency range chrome	30-16,000 Hz ±3 dB
Signal-to-noise ratio CCIR/ARM Dolby NR ON:	
Metal	> 63 dB
Chroms	> 65 dB
Ferro	> 63 dB
Driveability 10,000 Hz, metal	0 dB
Driveability 10,000 Hz, chrome/ferro	-7 dB
Distortion, ferro	< 2%
Distortion, Crom/Metal	< 3%
Channel separation	> 45 dB
Erasure	> 70 dB
Erasure frequency	98 kHz

CD player

CD, disc types	12 cm (5"), 8 cm (3")
Frequency range	20-20,000 Hz ±0.3 dB
Signal-to-noise ratio	> 90 dB/93 dB A-weighted
Dynamic range	> 98 dB
Channel difference	±1 dB
Converter system	2 x 16 bit, 4 x oversampling
Low pass filter analog	Bessel
Damping > 20,000 Hz	> 60 dB
Phase error between L and R	0 degree at 20-20,000 Hz

Connections

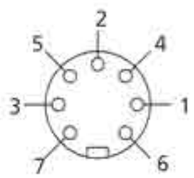
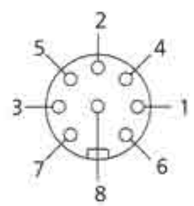
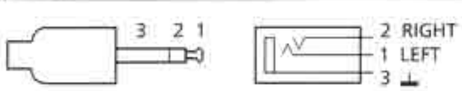
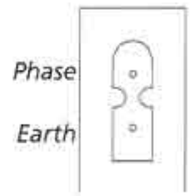
Master Link



Pin 1	Data - -0.25 V
Pin 2	Data + +0.25 V
Pin 3	ML Sence 0-5 V
Pin 4-10	N.C.
Pin 11	Supply voltage -7 V → -15 V, stand-by -3 V → -15 V
Pin 12	Supply voltage 7 V → 15 V, stand-by 3 V → 15 V
Pin 13	Audio L-
	1 V bal., R_{in} 2.2 MΩ, R_{out} 75 Ω
Pin 14	Audio L+
	1 V bal., R_{in} 2.2 MΩ, R_{out} 75 Ω
Pin 15	Audio R-
	1 V bal., R_{in} 2.2 MΩ, R_{out} 75 Ω
Pin 16	Audio R+
	1 V bal., R_{in} 2.2 MΩ, R_{out} 75 Ω

1 - 3
SPECIFICATION GUIDELINES

1 - 3

Audio Aux Link		
	Pin 1	Left out
	Pin 2	GND
	Pin 3	Left in
	Pin 4	Right out
	Pin 5	Right in
	Pin 6	Datalink
	Pin 7	Not used
Power Link	Pin 1	Power up
	Pin 2	GND
	Pin 3	Left channel
	Pin 4	Speaker on
	Pin 5	Right channel
	Pin 6	Datalink
	Pin 7	Data ground
	Pin 8	Power failure/Overload
Headphones	4.1 V / 235 Ω	
		
Mains	Cable included,	
	100 V AC , J type 2634, 2639	
	120 V AC, USA type 2633, 2638	
	230 V AC, EU type 2631, 2636	
	240 V AC, GB type 2632, 2637	

Dimensions	
W x H x D	31 x 36 x 16 cm
Power frequency	50-60 Hz
Power consumption	Max. 35 watts
Power consumption, Stand-by	< 2.8 watts
Weight	6.9 kg

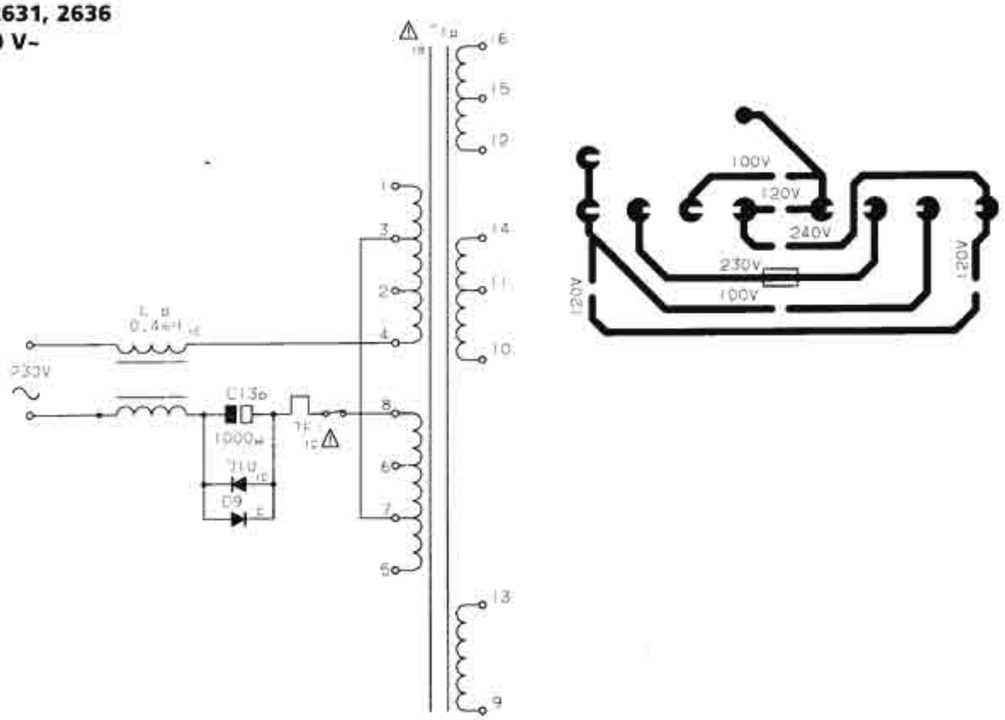
Subject to change without notice

1 - 4
WIRING OF TRANSFORMER

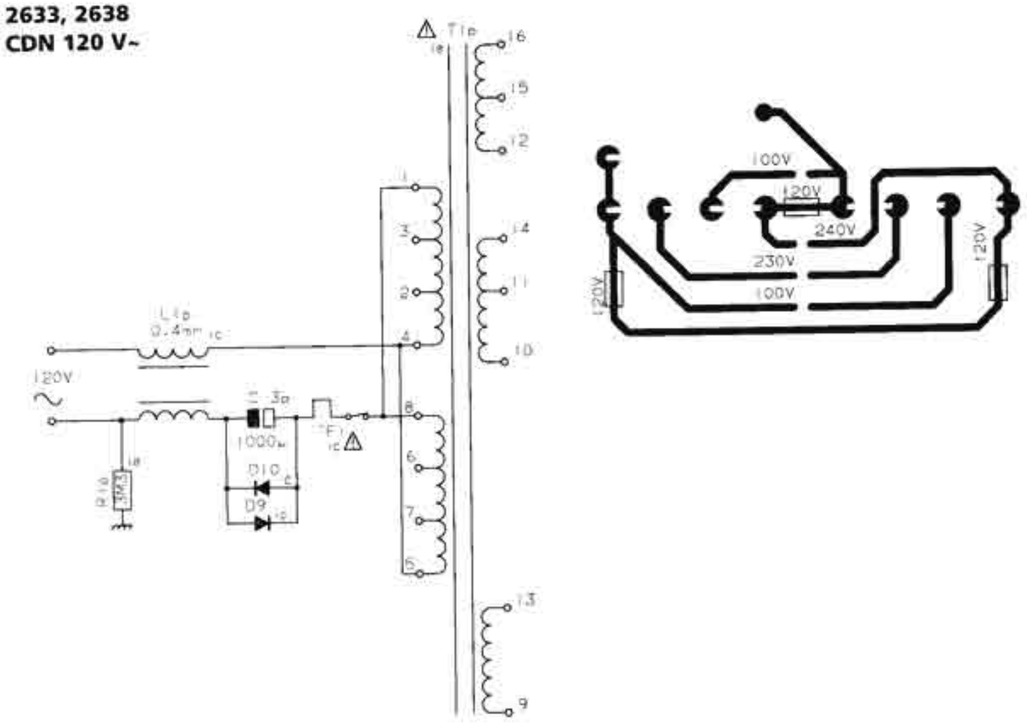
1 - 4
WIRING OF TRANSFORMER

WIRING OF TRANSFORMER, PCB 15

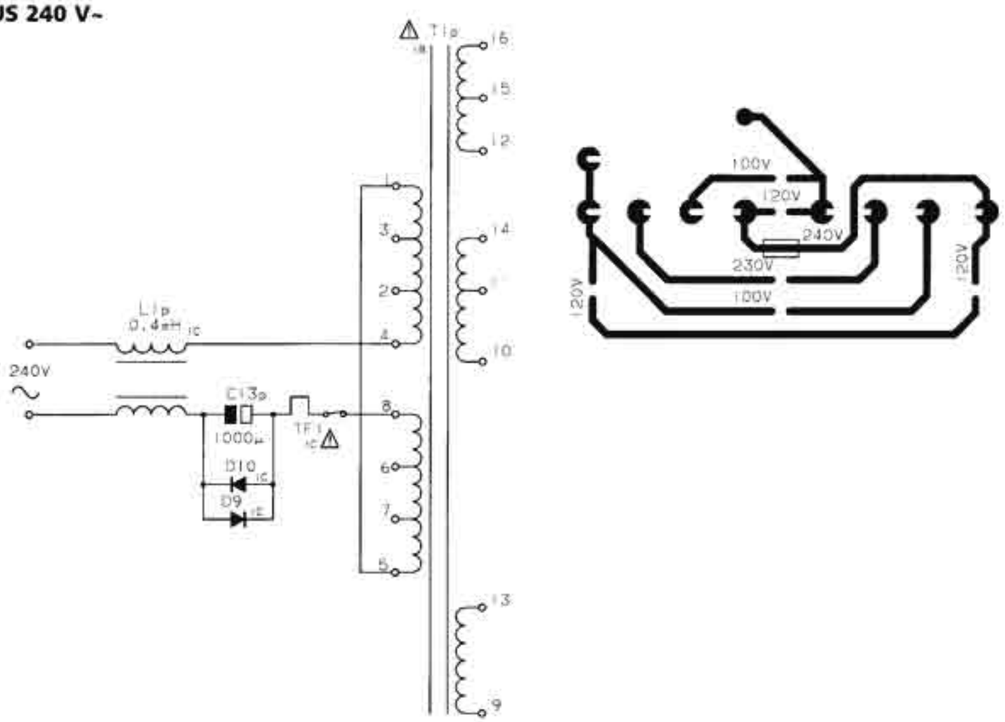
Type 2631, 2636
EU 230 V~



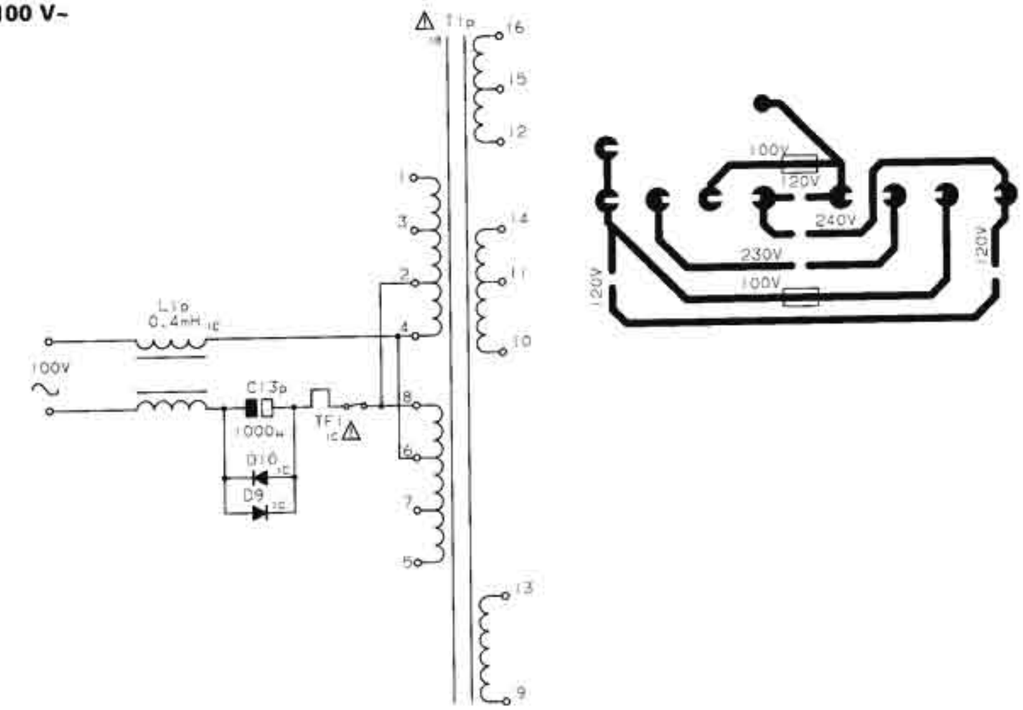
Type 2633, 2638
USA, CDN 120 V~



Type 2632, 2635, 2637, 2640
GB, AUS 240 V~



Type 2634, 2639
JPN 100 V~



Brief operation guide
For more detailed operation see User's guide.

Closeup operation:

Radio
Pressetting radio stations

RADIO — Turn on the radio
then
TUNE

▲ — Switches from FM to AM, or vice versa

then
PLAY — Press to accept FM or AM

▲ or ▼ — Press to search for a radio station - up or down the frequency band

then
PLAY — Press to accept the station you have found

▲ or ▼ — Press to change the displayed program number (1-30), if you like
then
PLAY — Press to store the radio station on the displayed program number

If you want to name the program:
▲ or ▼ — Press to reveal the characters one by one

⏩ or ⏪ — Moves to the next character position forwards or backwards

Keep writing the name you want, using this method ...

PLAY — Finally, press to store your new radio program

Playing Radio programs

▲ or ▼ — Press to step through your radio programs

0 through 9 — Alternatively, key in the exact program number you want (1-30)

● — Switches the system to stand-by

Tape
Playing the tape

TAPE — Starts playing the tape you have loaded

Press **1** to start playing from the very beginning of the tape

TURN — "Turns" the tape to start playing the other side

▲ — Press to play the next track

▼ — Press to play the current track again
Press twice to play the previous track

0 through 9 — Alternatively, key in the exact track number you want to hear

⏪ — Rewinds the tape

⏩ — Fast forwards the tape

then
PAUSE — Press to pause the tape recorder
or
PLAY — Press to resume playing

● — Switches the system to stand-by

Instant recording on tape

RADIO — Start playing the source you wish to record, for example radio
then
RECORD — Press to make the tape recorder ready for recording
then
RECORD — Press again to start recording

PAUSE — Press to pause your recording

A pause of four seconds is inserted on the tape
then
RECORD — Press to resume recording
or
RADIO — Press to stop the tape recorder and return to controlling the radio

At any time *before* you stop the tape recorder ...

RETURN — Press to return to the spot where your recording started

Dolby NR noise reduction*

◫ NR — Press while the tape is playing to see the current setting
then
◫ NR — Press again to switch Dolby NR from on to off, or vice versa

Dolby NR is automatically reset to ON during recording.

CD

CD — Starts playing the CD you have loaded

▲ — Press to play the next track

▼ — Press to play the current track again
Press twice to play the previous track

0 through 9 — Alternatively, key in the exact track number you want to hear

⏩ — Hold down to search forward towards the end of the CD

⏪ — Hold down to search backwards towards the beginning of the CD

PAUSE — Press to pause playback

PLAY — Press to resume playing

● — Switches the system to stand-by

1 - 5
BRIEF OPERATION GUIDE

Setting the clock

SETUP — Press to access the setup function
then
▼ — Press once to display CLOCK?
then
PLAY — Press to call up the built-in clock

The time is displayed ...

▲ or ▼ — Press to change the displayed time, if necessary
then
PLAY — Press to accept the displayed time

The date and month are displayed ...

▲ or ▼ — Press to change the displayed date and month, if necessary
then
PLAY — Press to accept the date

The year is displayed ...

▲ or ▼ — Press to change the displayed year, if necessary
then
PLAY — Press to accept the year

The display now reads STORE?

PLAY — Press to store your new setting of the clock

Sound

^ — Press to raise the volume

v — Press to lower the volume

MUTE — Silences the speakers immediately
Press again to recall the sound

Adjusting sound

SETUP — Press to access the setup function

The display reads SOUND?
then
PLAY — Press to access the sound adjustment function

PLAY — Press repeatedly to display the sound cue you want

Then adjust the sound to your liking ...

⏪ or ⏩ — Adjusts balance to the left / Adjusts balance to the right

▲ or ▼ — Raises or lowers the sound levels; cuts the loudness function in or out

then
PLAY — Press repeatedly until STORE? is displayed
then
PLAY — Press to store *all* the current sound levels

If you haven't stored your sound adjustment ....

RESET — Press any time to reset the sound levels to their original settings

Using the Beo4

RADIO — Turns on the radio

CD — Starts the CD player

A TAPE — Starts the tape recorder

▲ or ▼ — Press to step through your radio programs, tracks on a tape or a CD

Alternatively, key in the exact number, using the number keys

⏩ or ⏪ — Fast forwards a tape / Rewinds a tape

yellow — Searches through a CD
or
green — Searches backwards through a CD

STOP — Pauses playback any time

GO — Press to resume playback

^ — Raises the volume

v — Lowers the volume

● — Switches off

Option programming Beo4

hold
●
while pressing
LIST — Until the Beo4 display reads OPTIONS?

GO
LIST — Until the display reads A:OPT

0 — Disable the remote control function

1 — Enable the remote control function

Option programming Beolink 1000

LINK
0 — Disable the remote control function

STORE

LINK
1 — Enable the remote control function

STORE

** Trademark of Dolby Laboratories Licensing Corporation.*
Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

2 - 1
EXPLANATION OF DIAGRAM

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

Control circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. ST.BY.= low in the stand-by mode or $\overline{\text{ST.BY.}}$ = high in the stand-by mode.

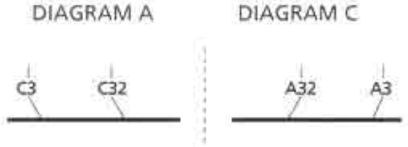
Wiring connections

The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number.
The bend of the wire indicates in wich direction the other end of the wire is found.

CONNECTION TO ANOTHER DIAGRAM PAGE



A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.

Supply Voltages

All supply voltages in the diagrams are indicated by an arrow and a voltage indication.

Ground symbols

Four different ground symbols are used in the set.

= Ground

= Signal ground

= Chassis

= Coarse ground

Symbol of safety components

When replacing components with this symbol, components with identical part numbers must be used. The new component must be mounted in the same way as the one replaced.

Measuring conditions

All DC voltages have been measured in relation to ground with a voltmeter with an input impedance of 10 Mohms.

The DC voltages are stated in volts (V), e.g. 0.7V.

All oscillograms and AC voltages have been measured in relation to ground with an oscilloscope or a voltmeter with an input resistance of 1Mohm.

AC voltages are stated in millivolts (mV), e.g. 660mV.

Caution

The use of any controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.

CLASS 1
LASER PRODUCT

COMPACT disc DIGITAL AUDIO

The black and yellow label on the compact disc player serves as a warning that the apparatus contains a laser system and is classified as a class 1 laser product. The apparatus must be opend by qualified servicemen only.

CD laserdiode

Wavelenght	780 nm ±20 nm, 30°C
Effect	2 mW ±0.1 mW, 30°C

Lithium battery

ADVARSEL
LITHIUMBATTERI - EKSPLOSIONSFARE
UDSKIFTNING MÅ KUN FORETAGES AF EN SAGKYNDIG OG SOM BESKREVET I SERVICE MANUAL

WARNING
LITHIUM BATTERY - RISK OF EXPLOSION
TO BE REPLACED BY QUALIFIED SERVICEMAN ONLY AND AS DESCRIBED IN THE MANUAL

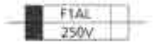
WARNING
Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.
When replacing the lithium battery in this set, note the following:
Use **only** batteries at the same make and type as mentioned in this service manual (see page 3-X).
Place the battery exactly like the old one.

2 - 2
EXPLANATION OF DIAGRAM

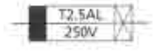
2 - 2

Explanation of the fuse symboles used in the set

Replace with the same type 1 ampere 250 volts quick acting fuse.

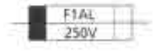


Replace with the same type 2.5 ampere 250 volts slow acting fuse.

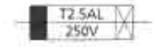


Explanation des symboles de fusible utilisés dans l'appareil

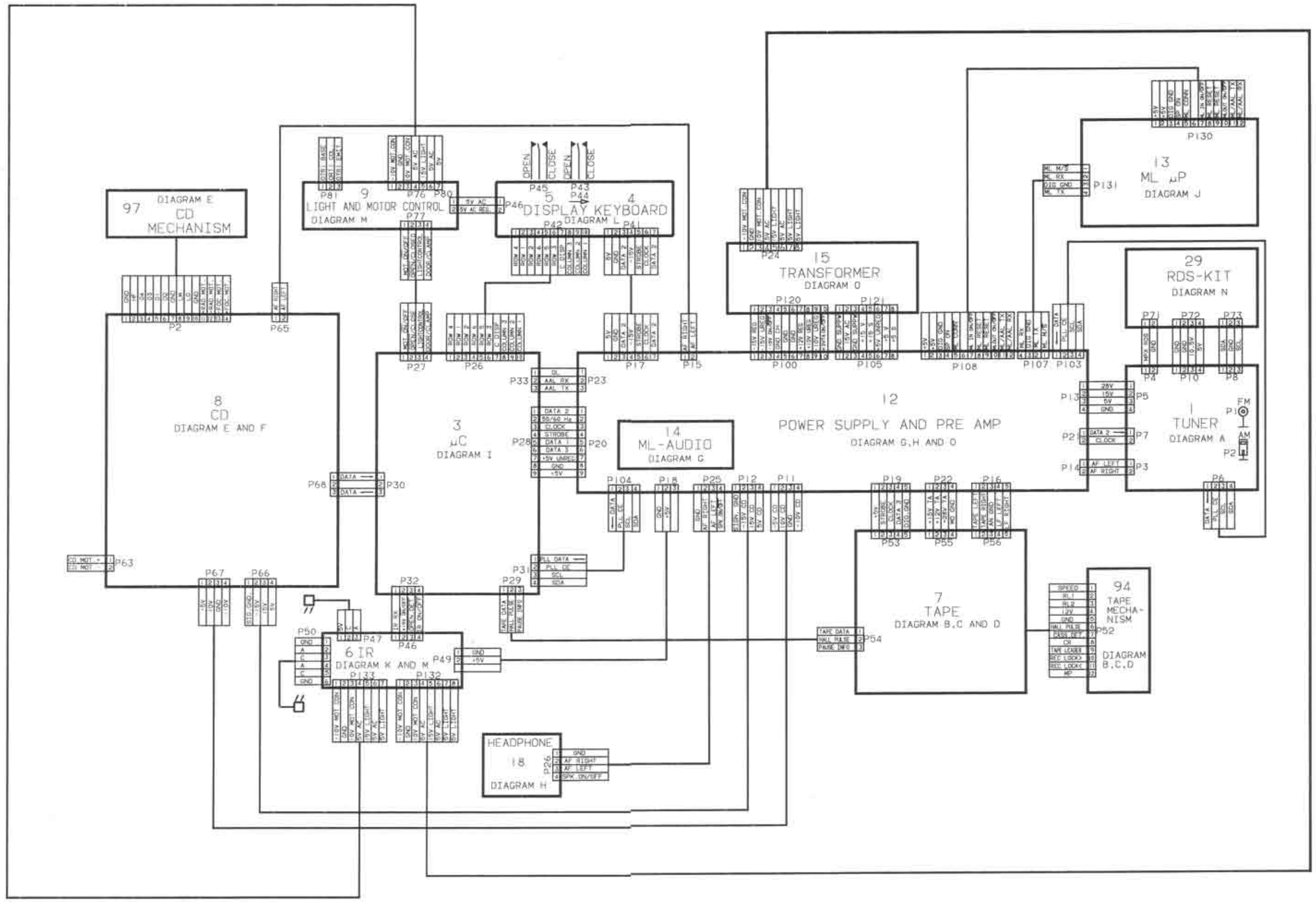
Remplacer par un fusible rapide de même type et de 1 ampères 250 volts.



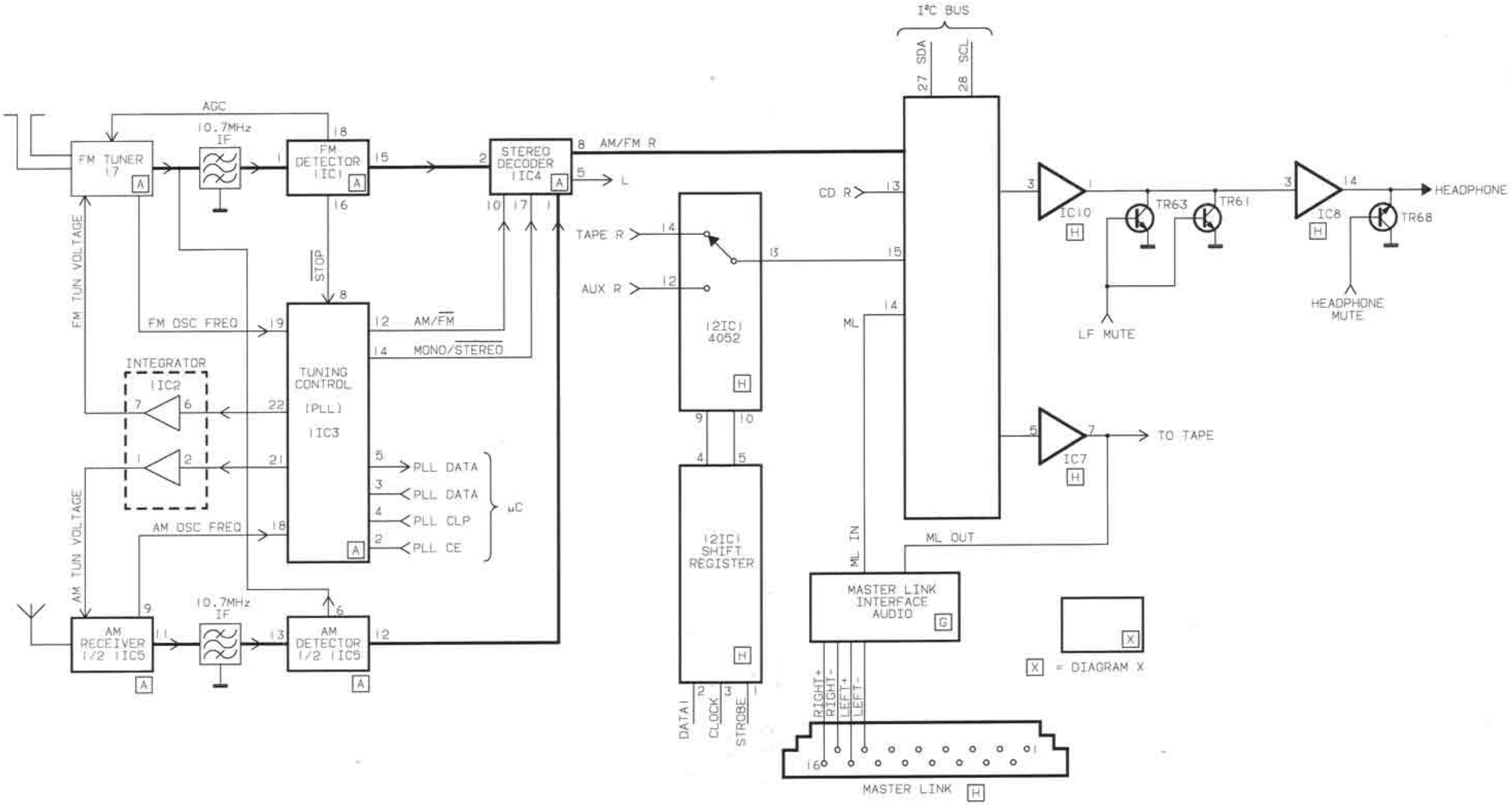
Remplacer par un fusible retardé de même type et de 2.5 ampères 250 volts.



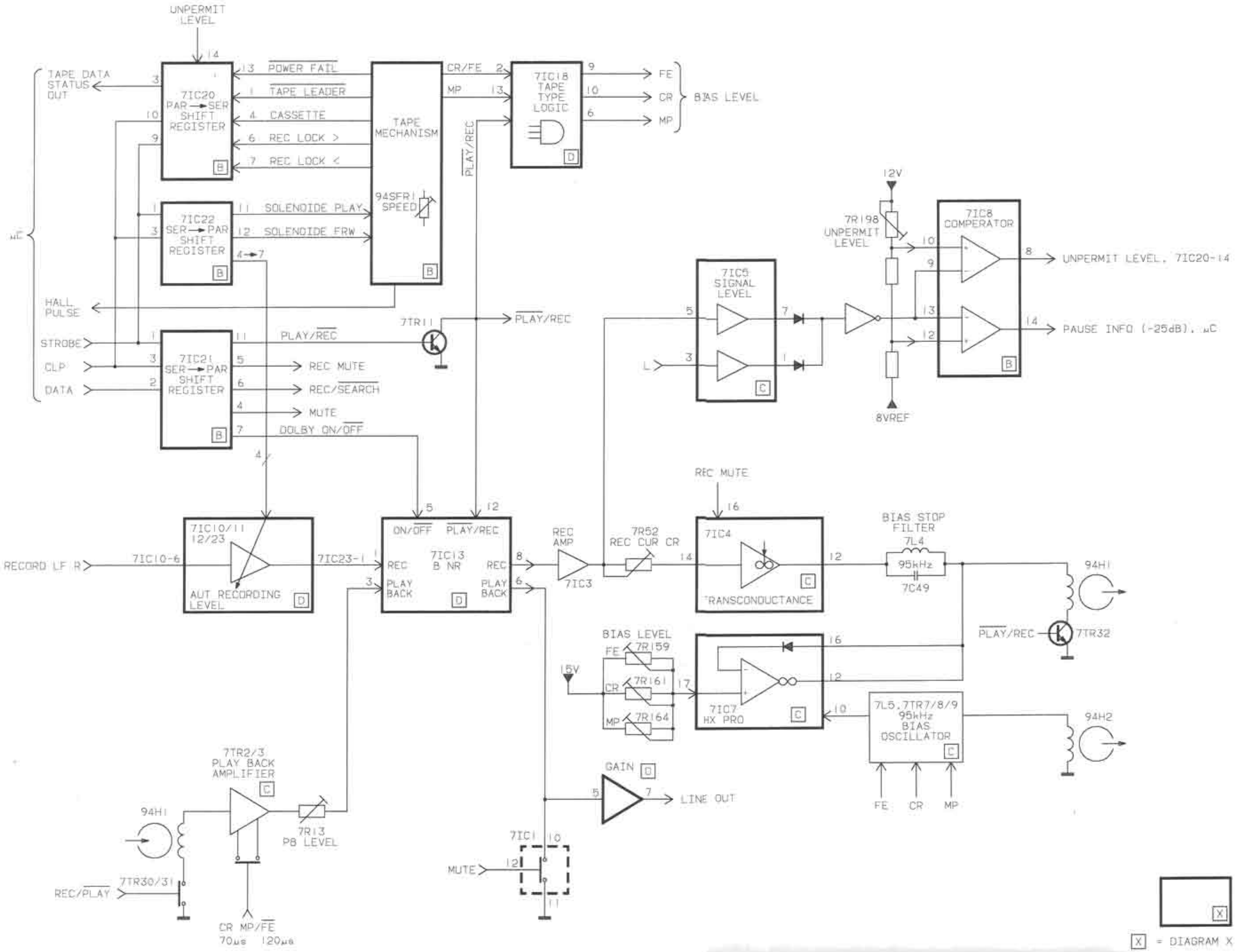
WIRING DIAGRAM



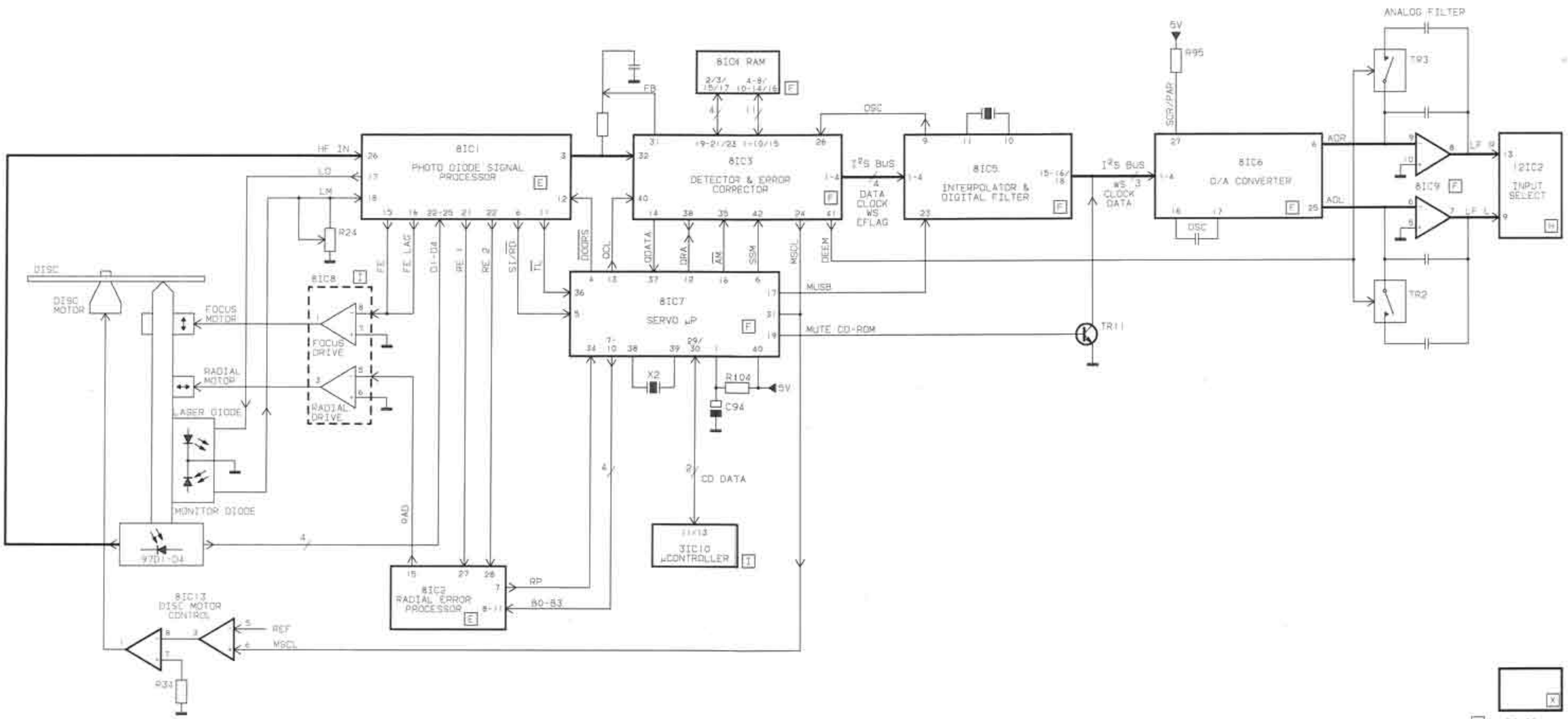
BLOCK DIAGRAM FOR TUNER



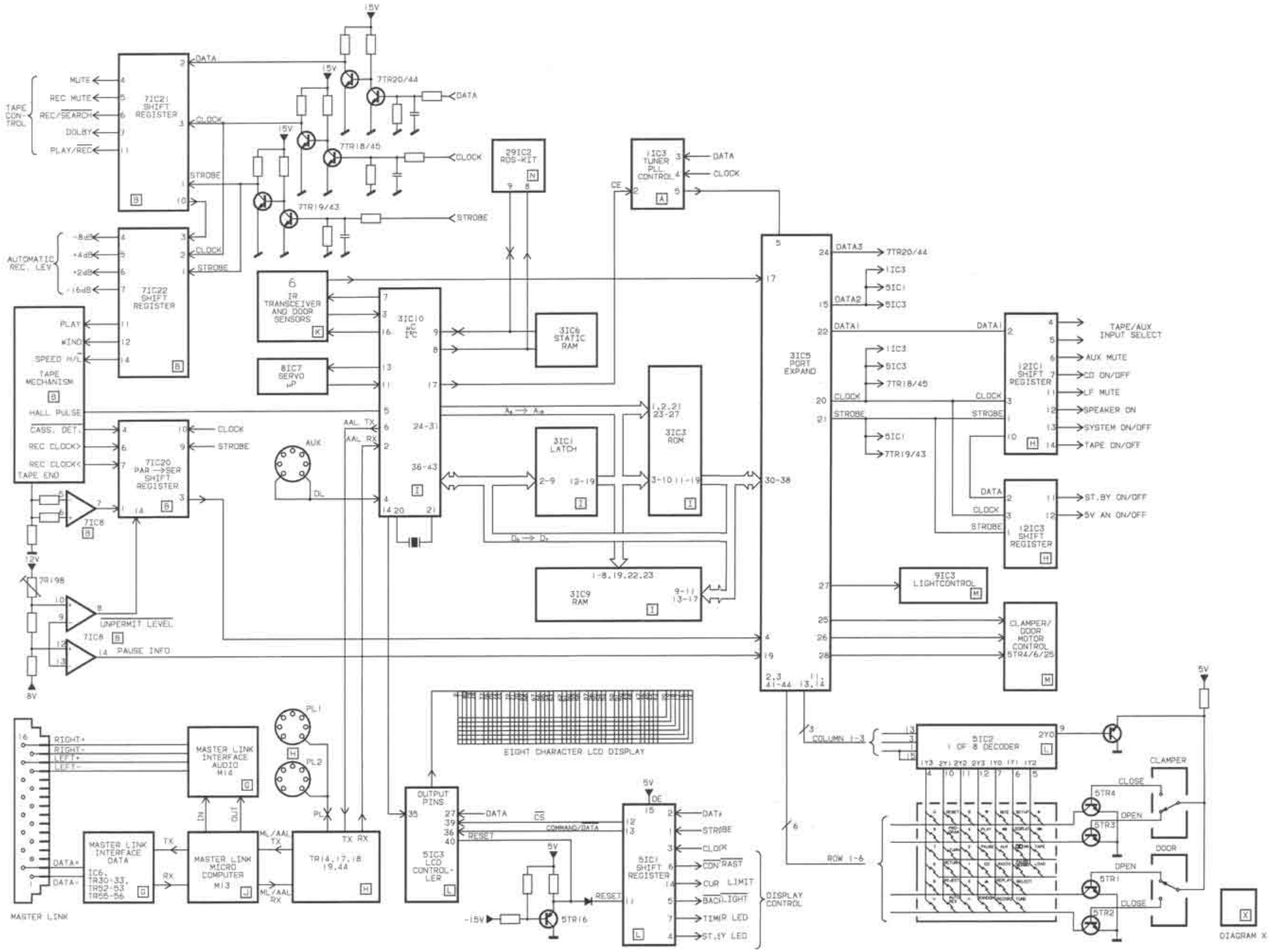
BLOCK DIAGRAM FOR TAPE



BLOCK DIAGRAM FOR CD



BLOCK DIAGRAM FOR SYSTEM CONTROL



2 - 8
BLOCK DIAGRAM

BLOCK DIAGRAM FOR POWER SUPPLY

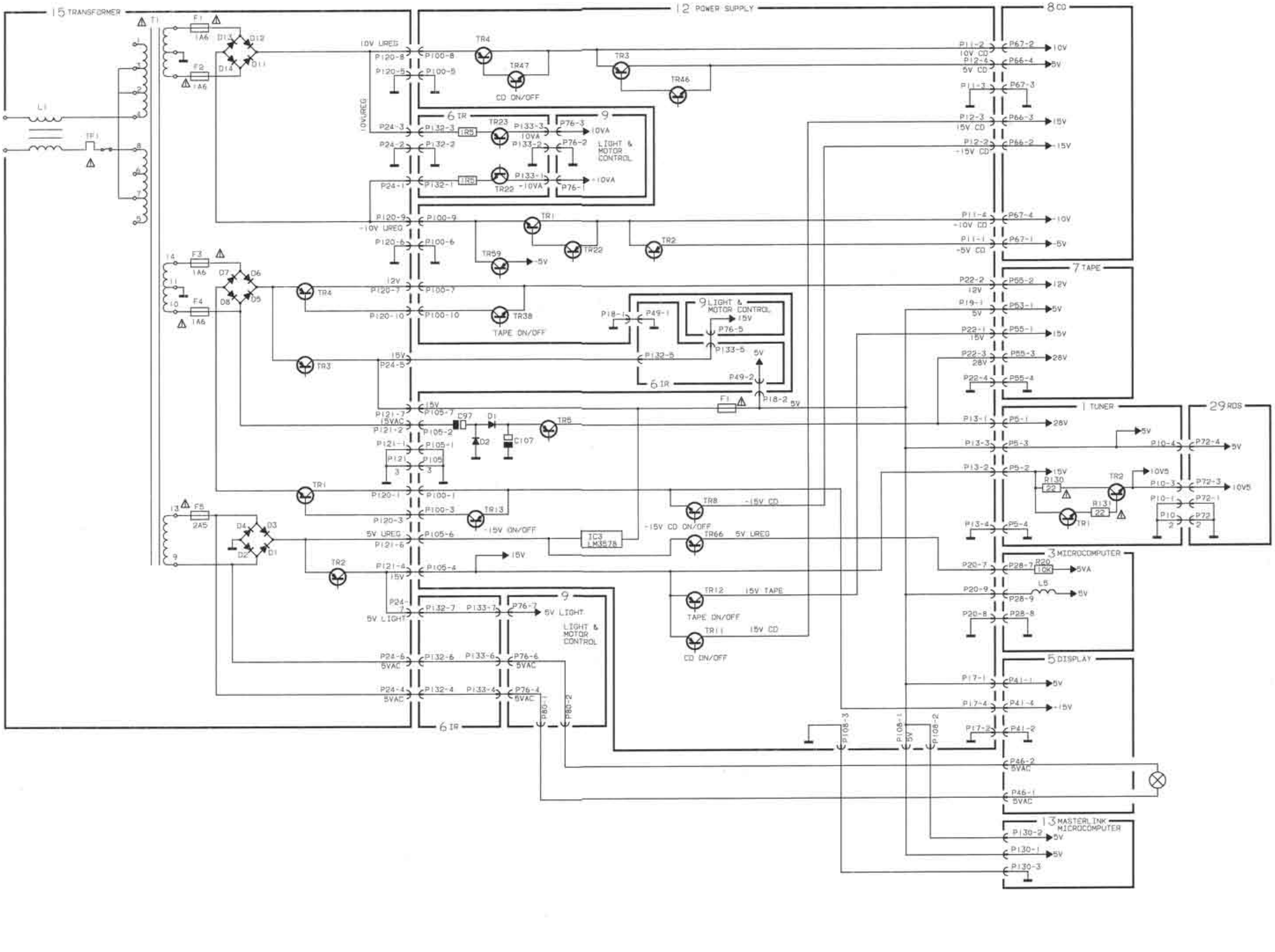
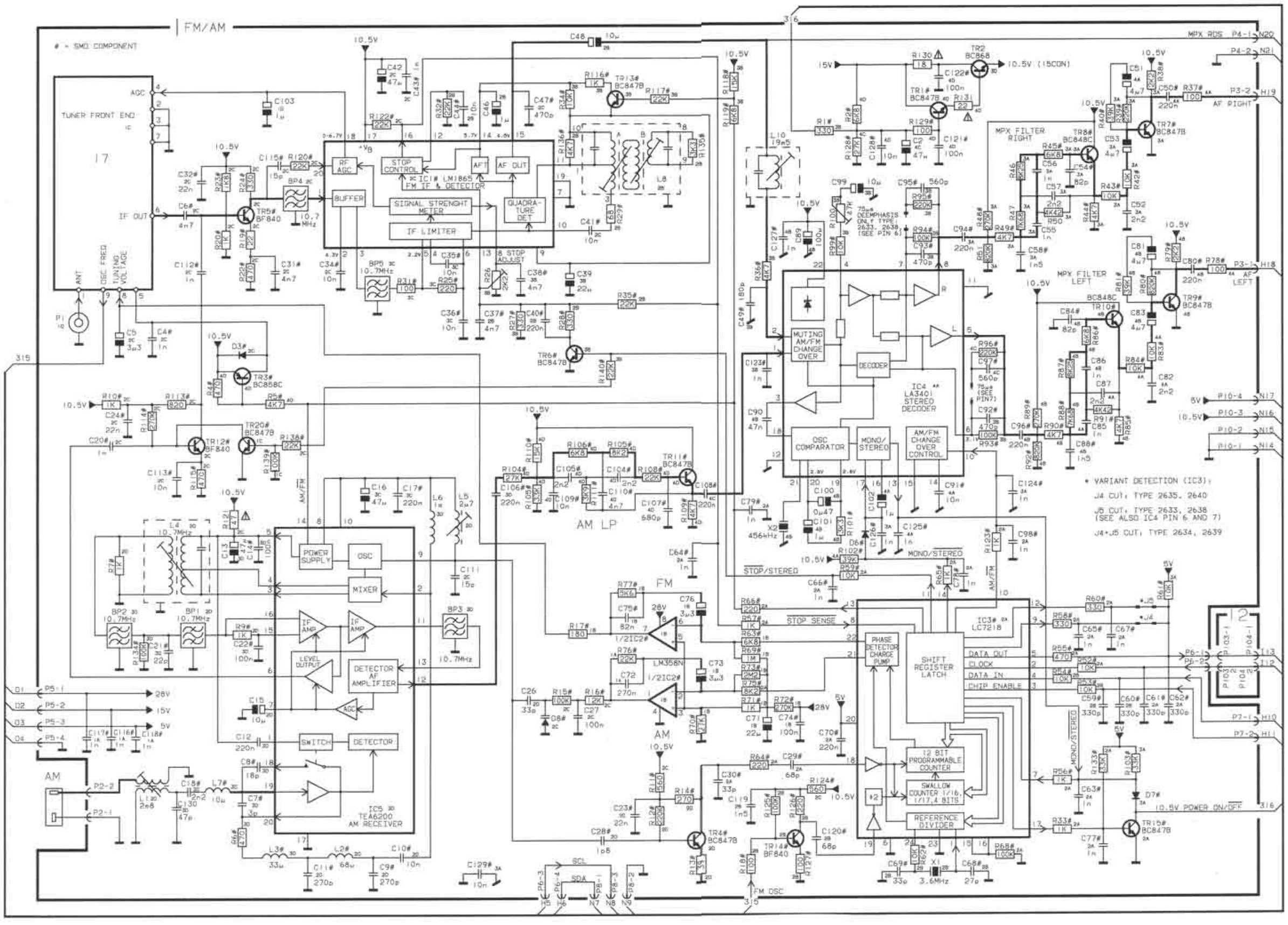
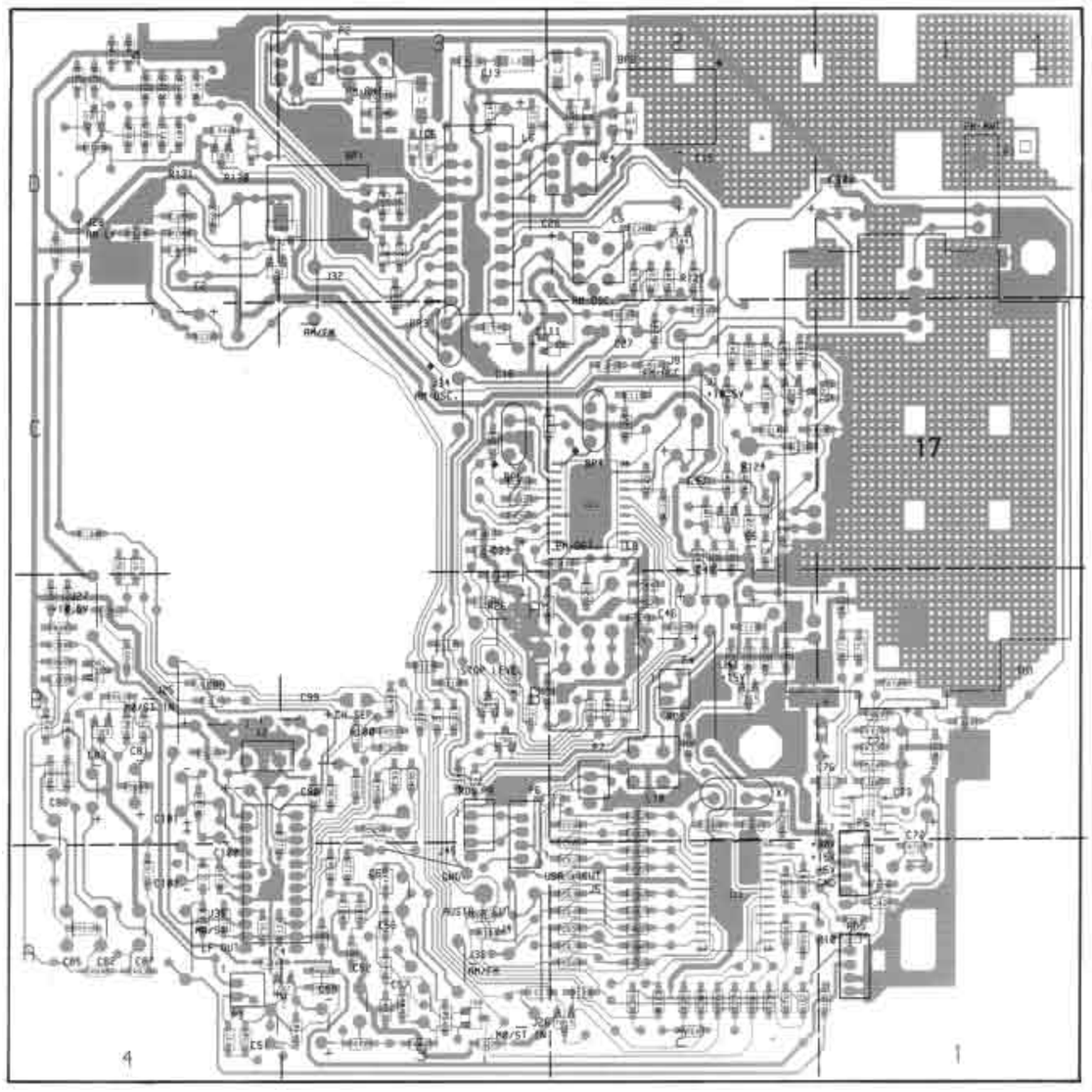


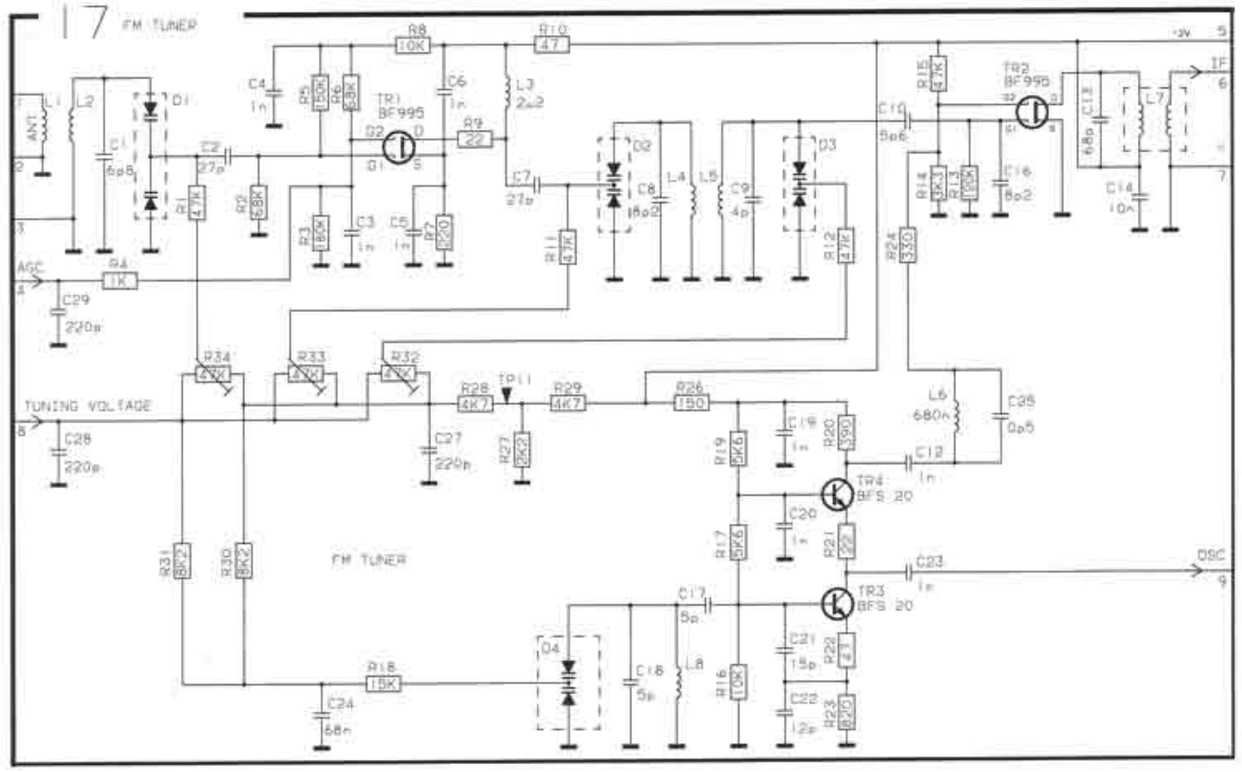
DIAGRAM A FM/AM, RF, IF DECODER



PCB 1

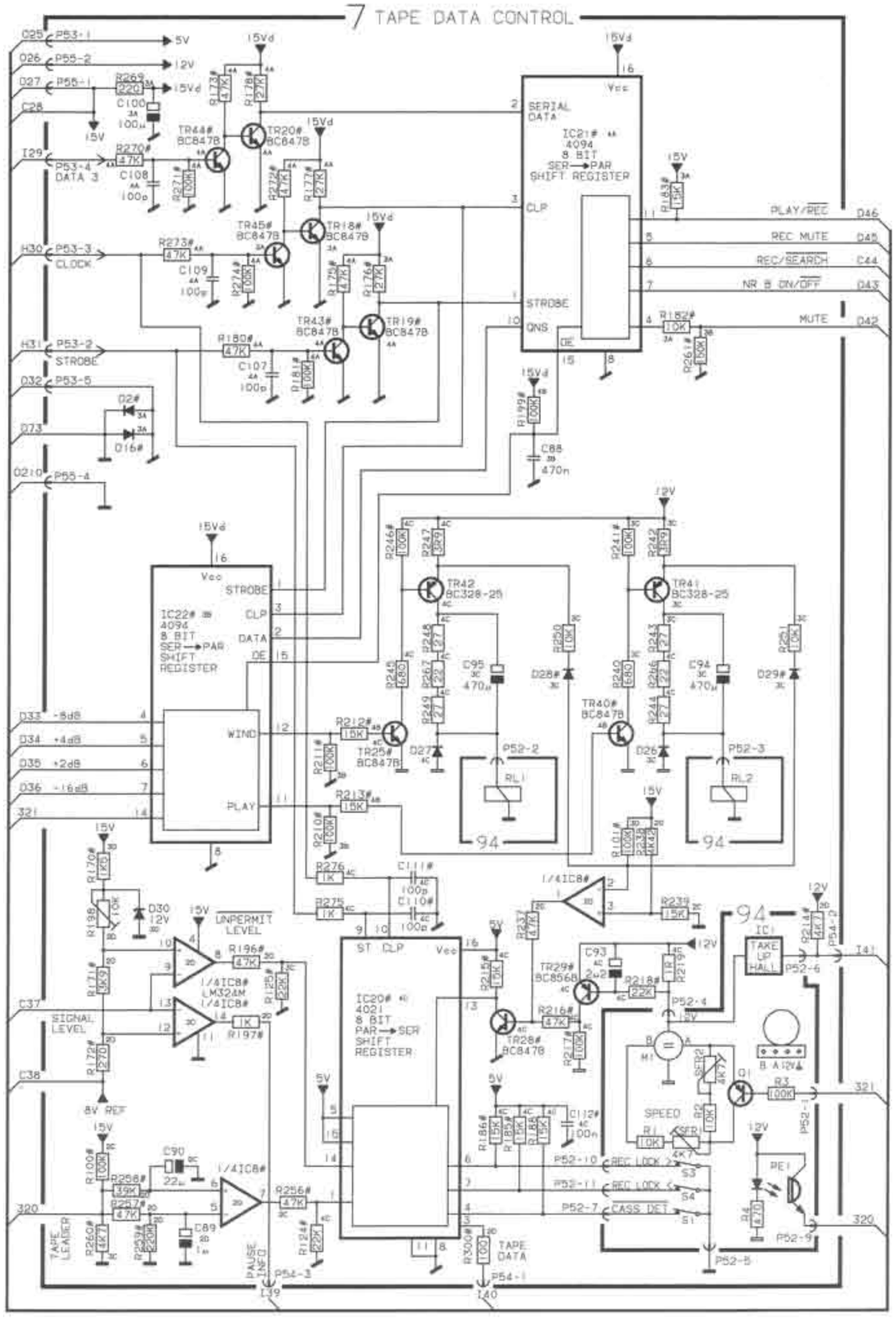


FM TUNER



The FM TUNER is a single unit.
With failure in this unit we recommend replacing the whole unit.
However the part no. of semi-conductors are in the list of semiconductors.

DIAGRAM B TAPE DATA CONTROL



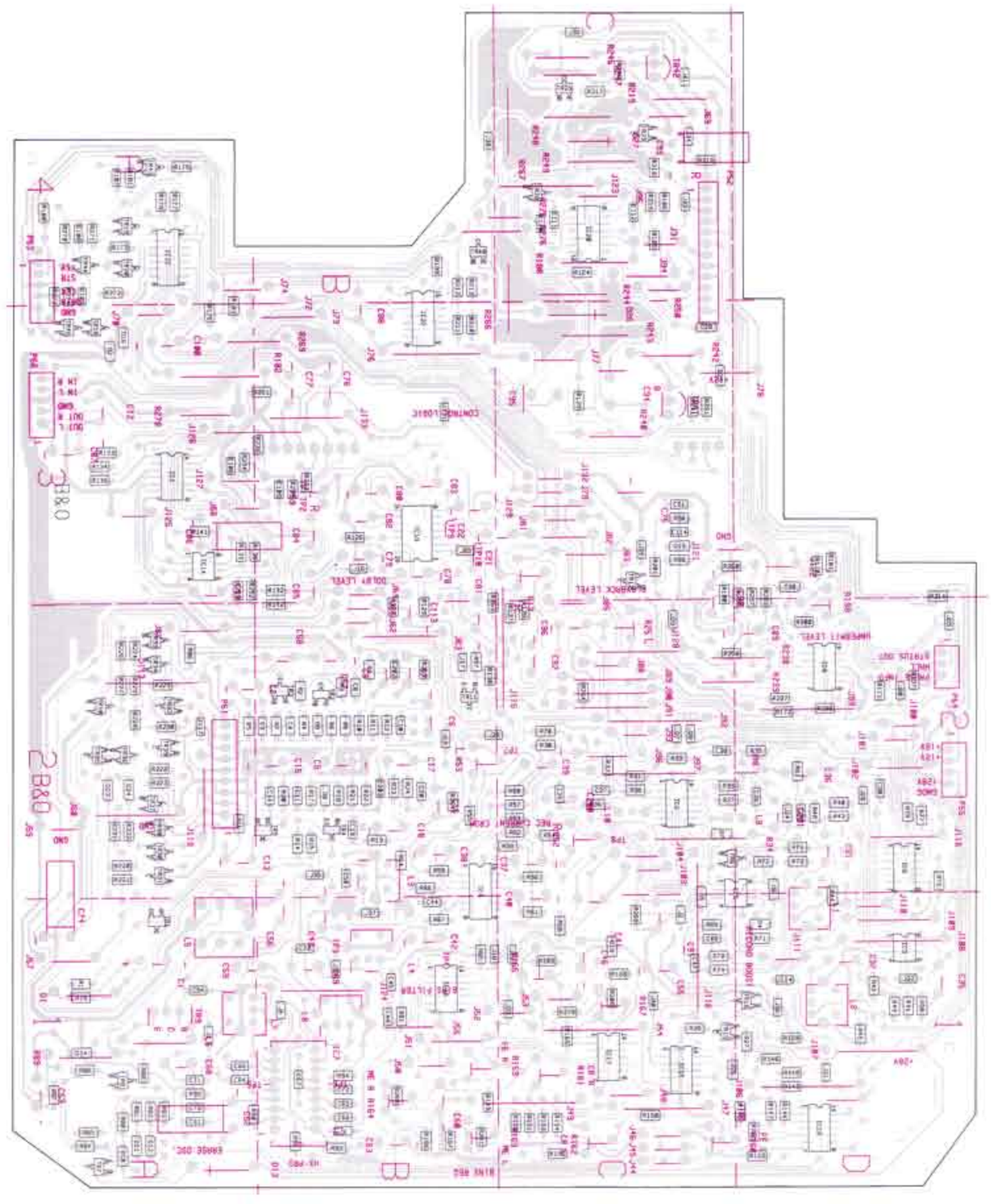


DIAGRAM C TAPE AF AND CONTROL

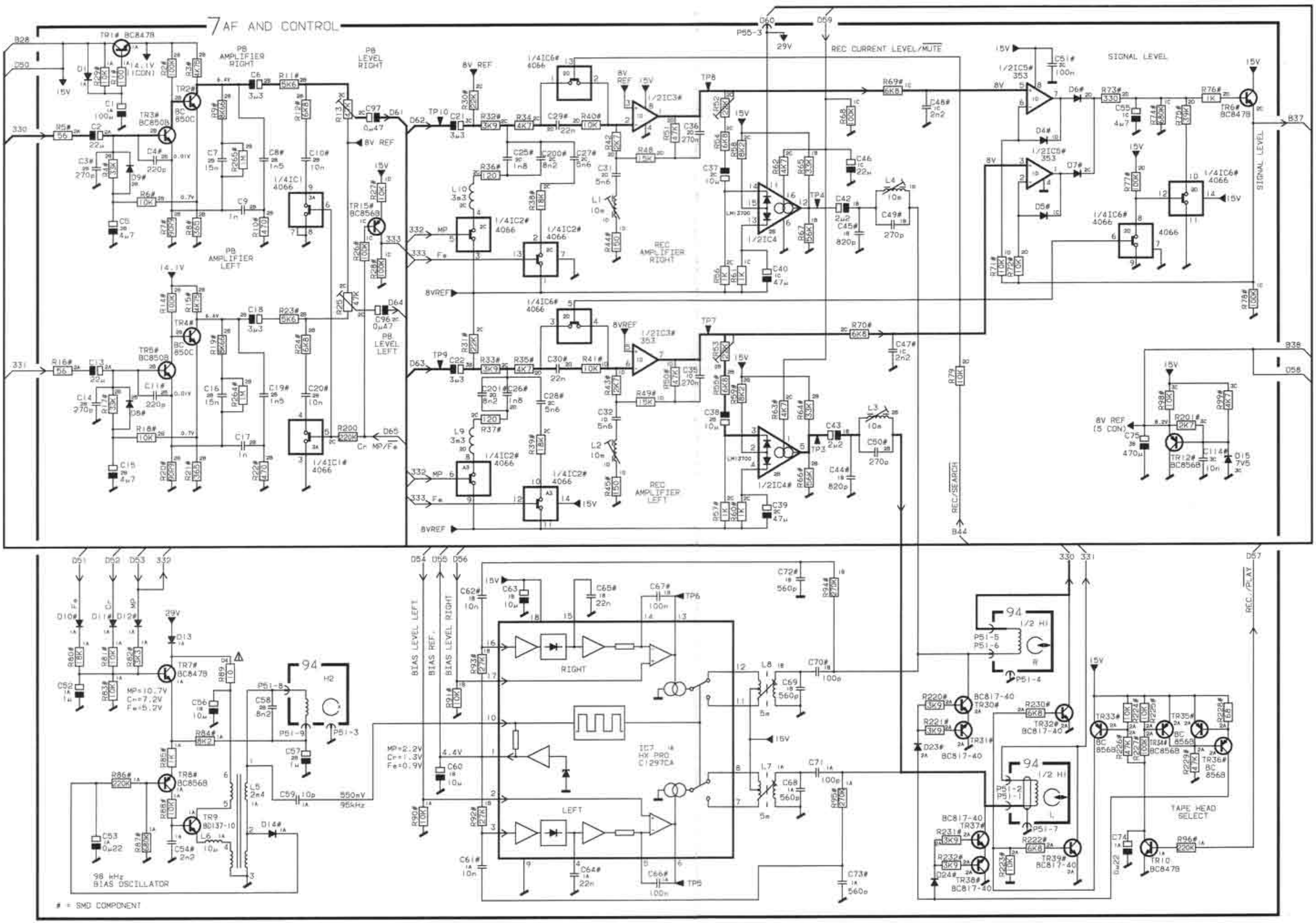


DIAGRAM D DOLBY AND TYPE LOGIC

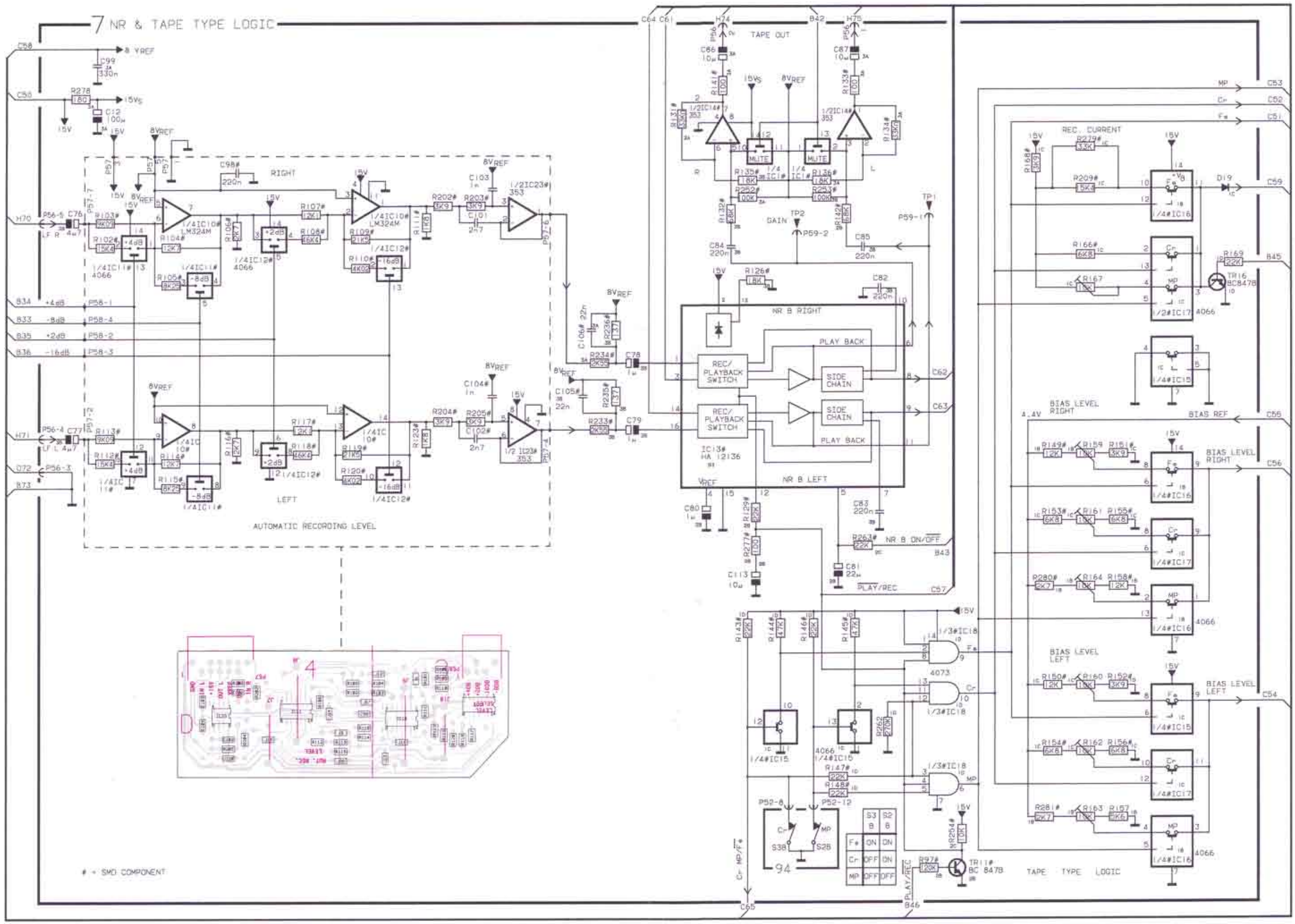


DIAGRAM E CD SERVO MOTOR SYSTEM

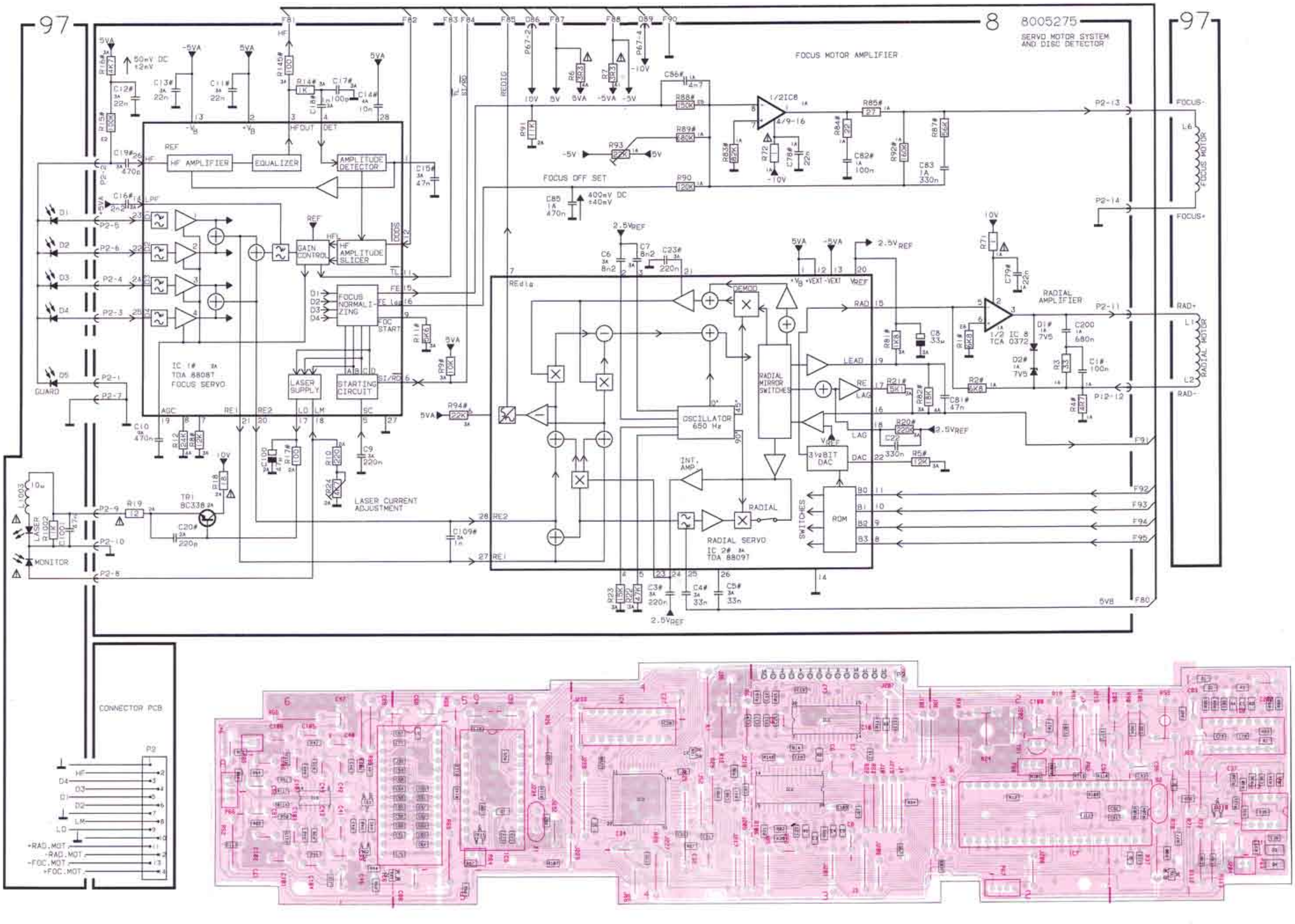


DIAGRAM F CD DECODER

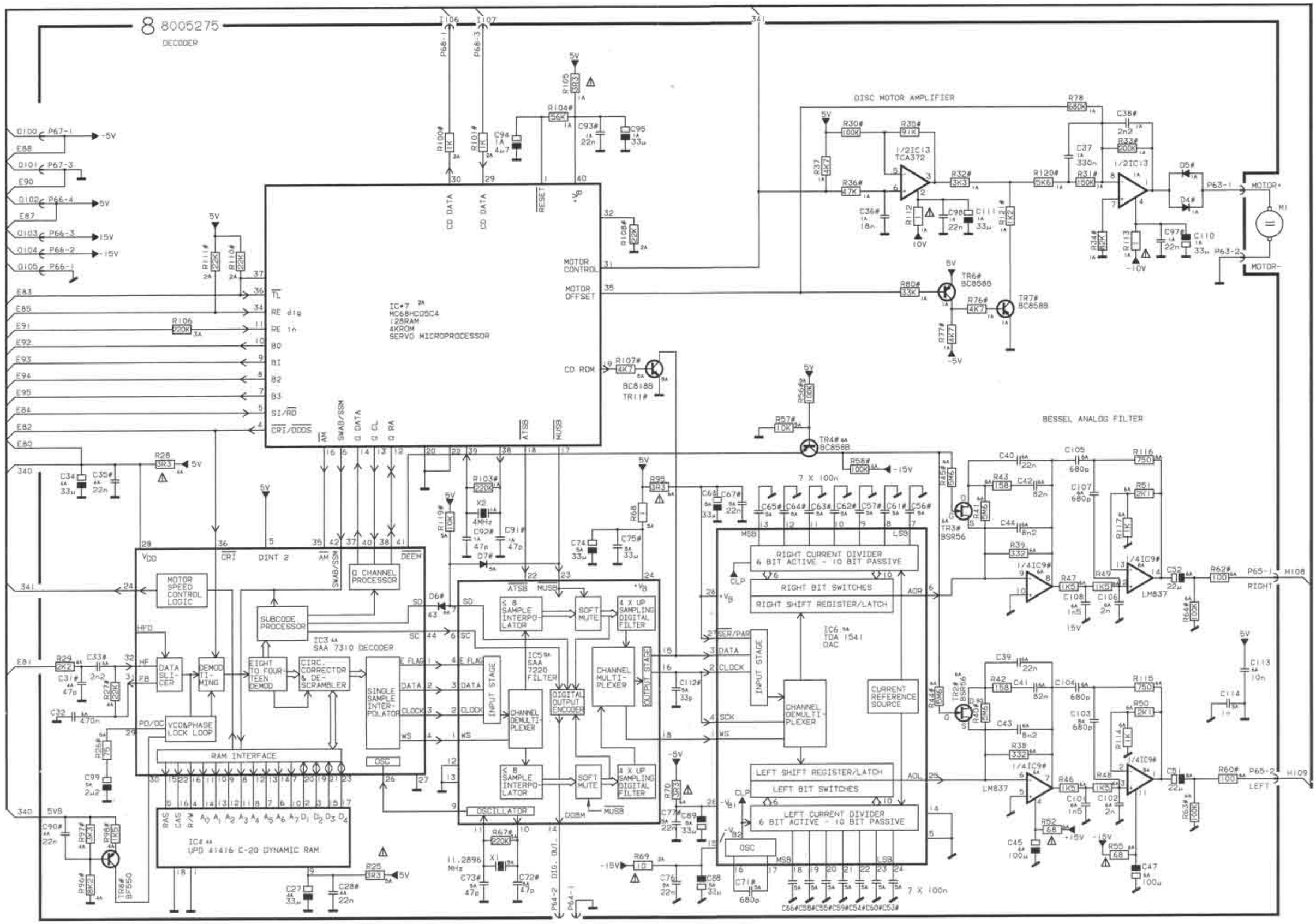


DIAGRAM G MASTERLINK

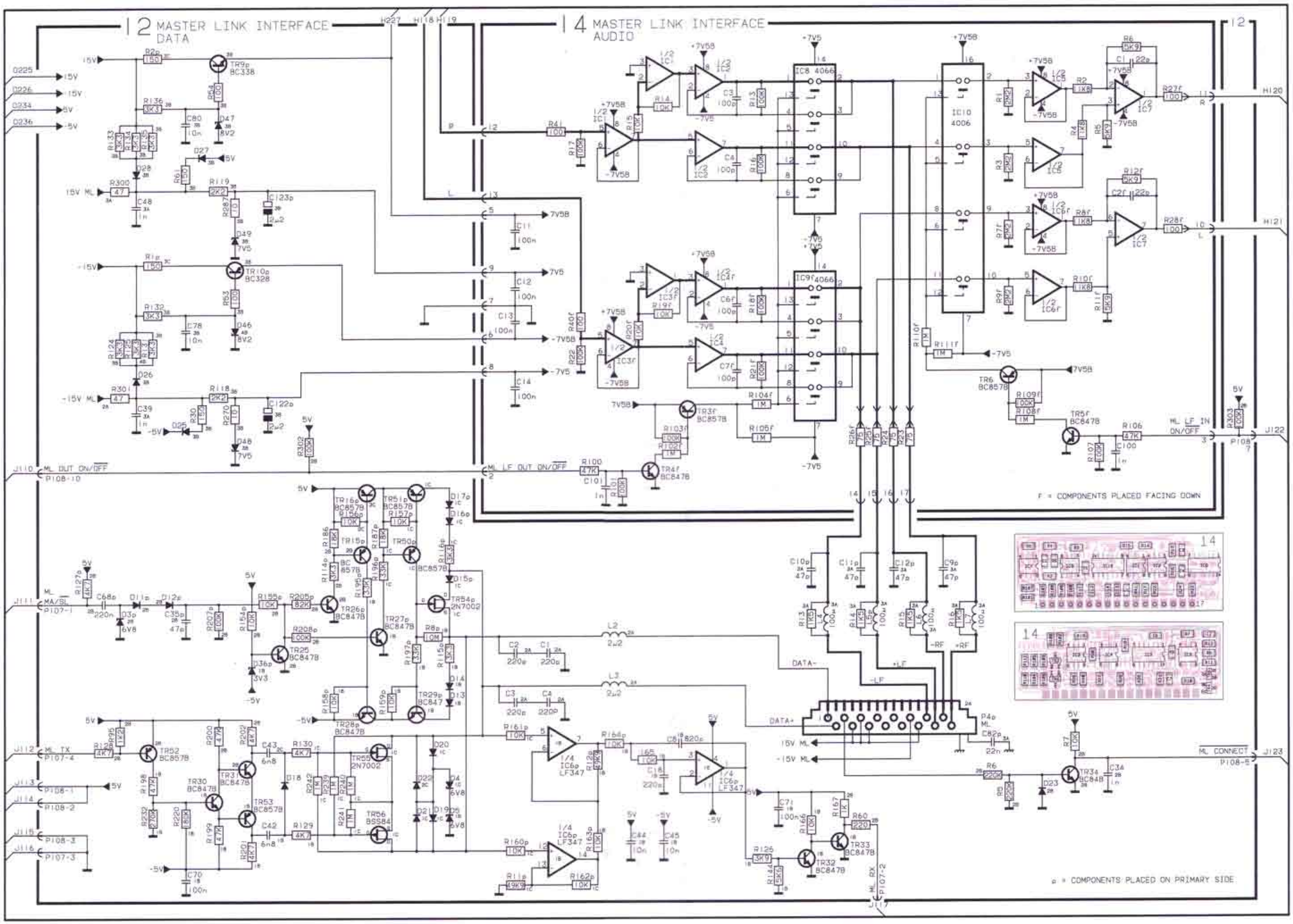
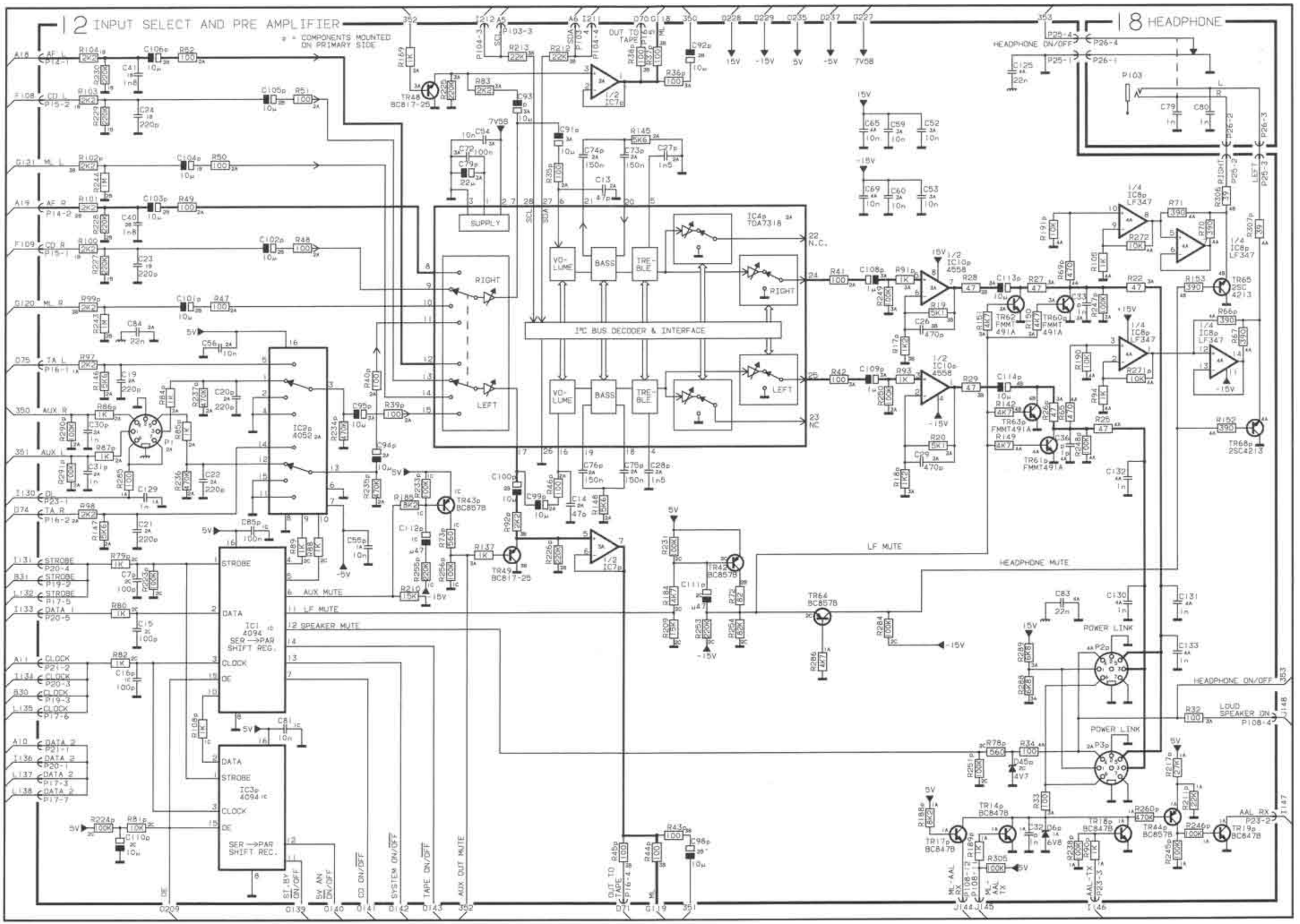
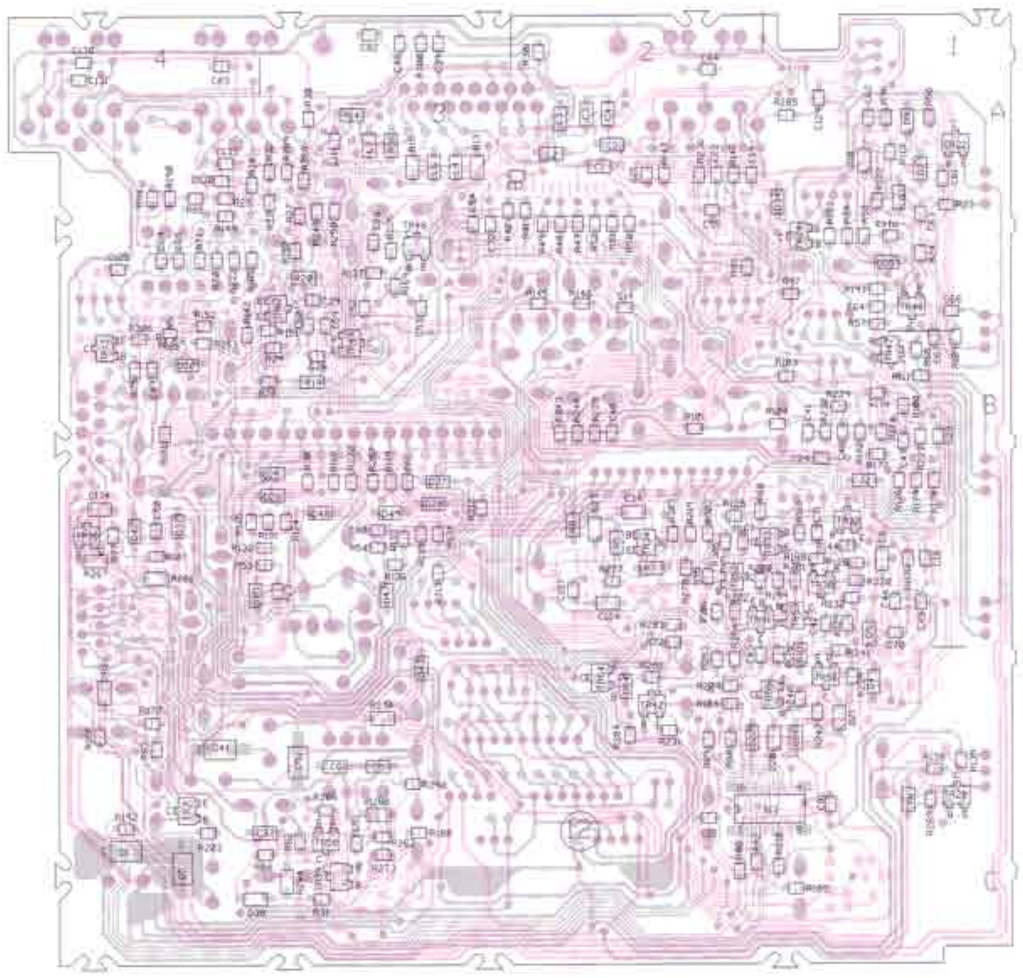


DIAGRAM H INPUTSELECT



2 - 18
PCB DRAWINGS
2 - 18

PCB 12



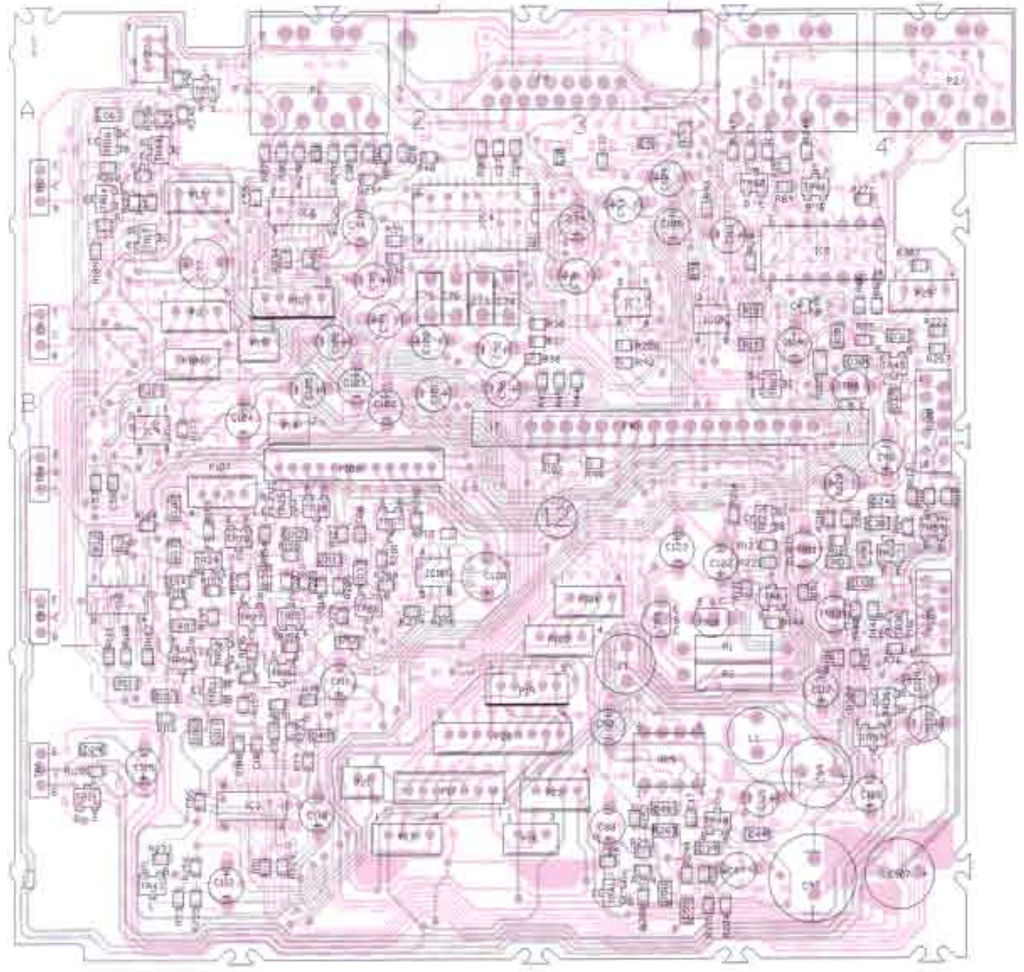


DIAGRAM I MICROCOMPUTER

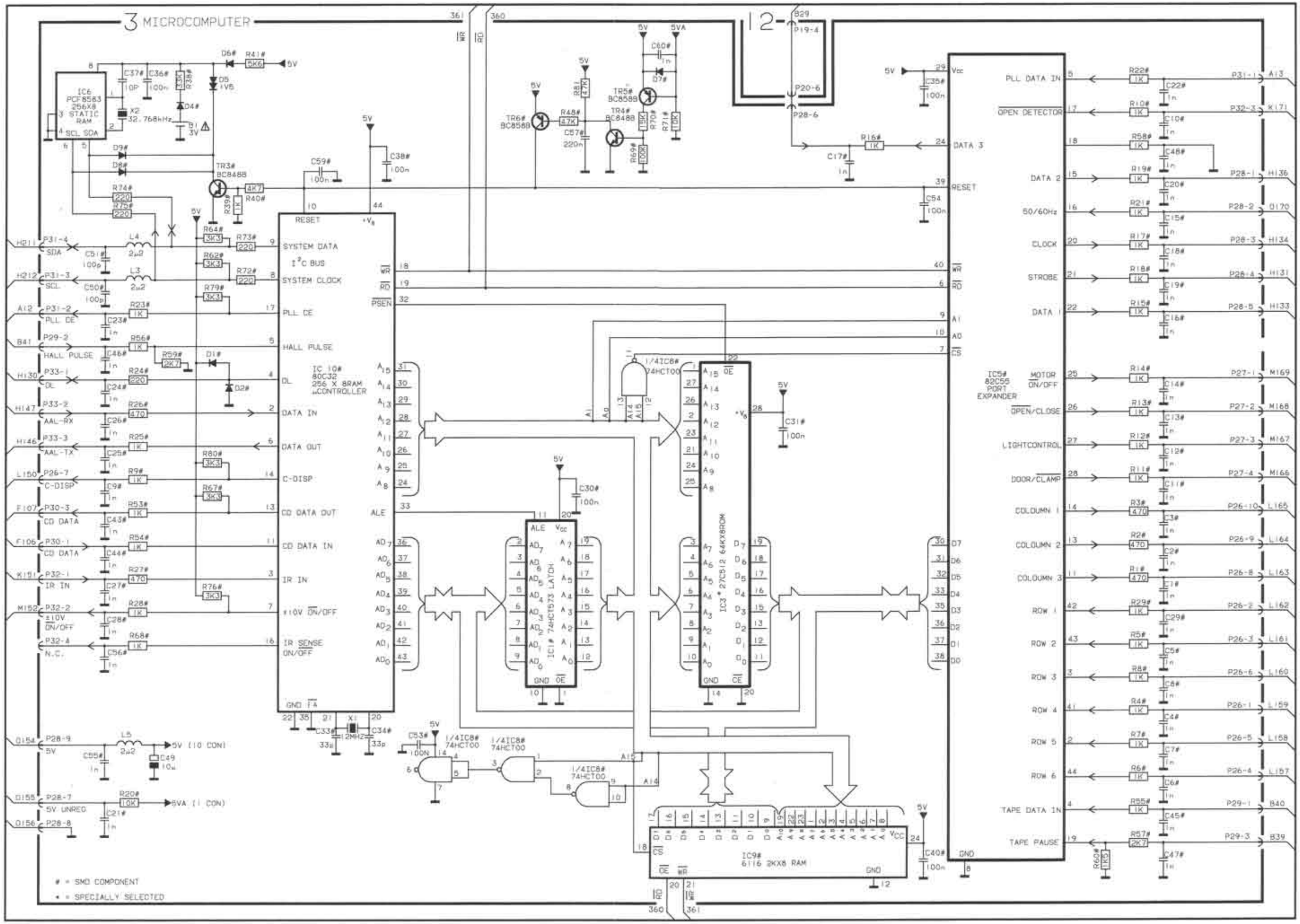


DIAGRAM J MASTERLINK MICROCOMPUTER

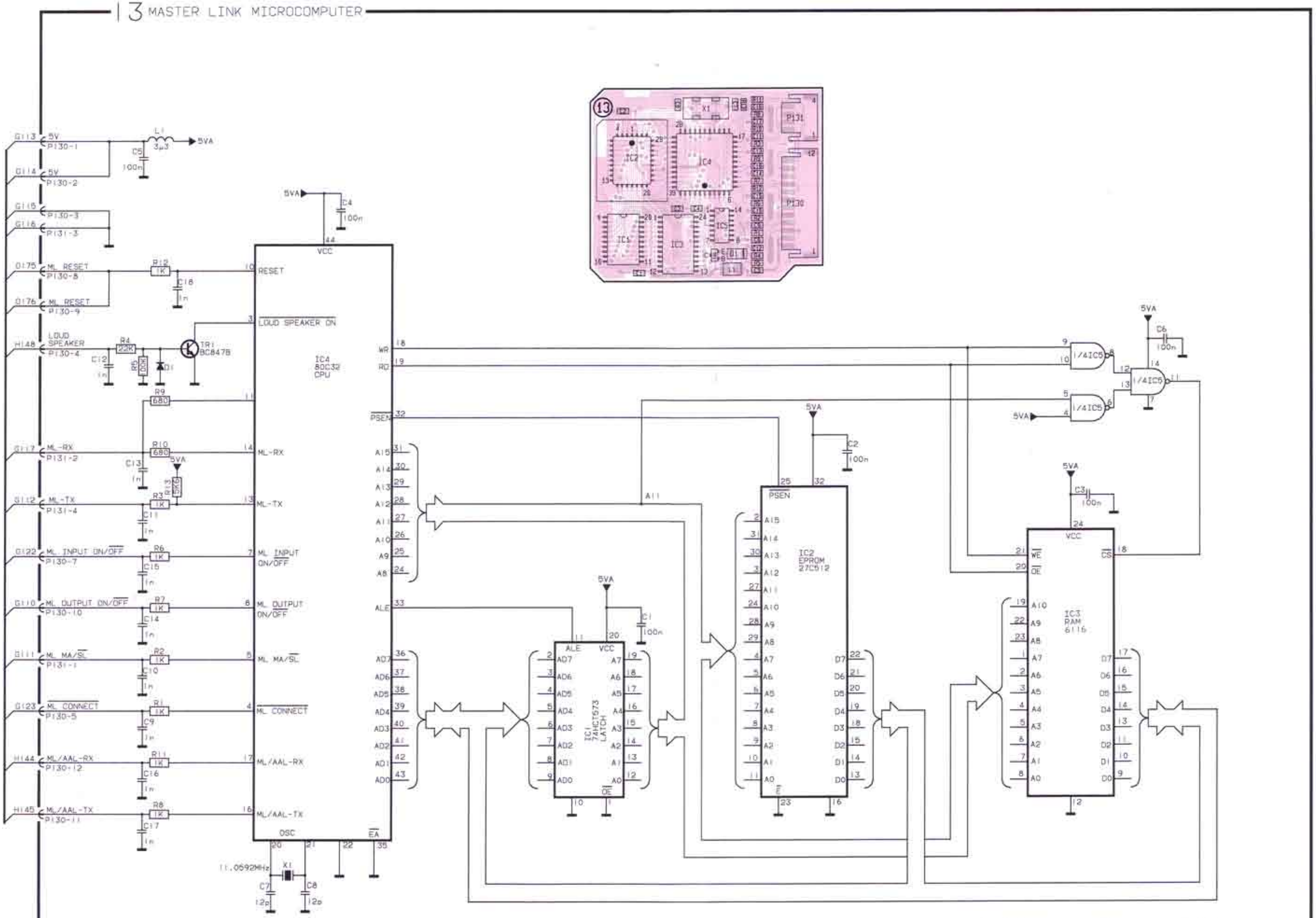
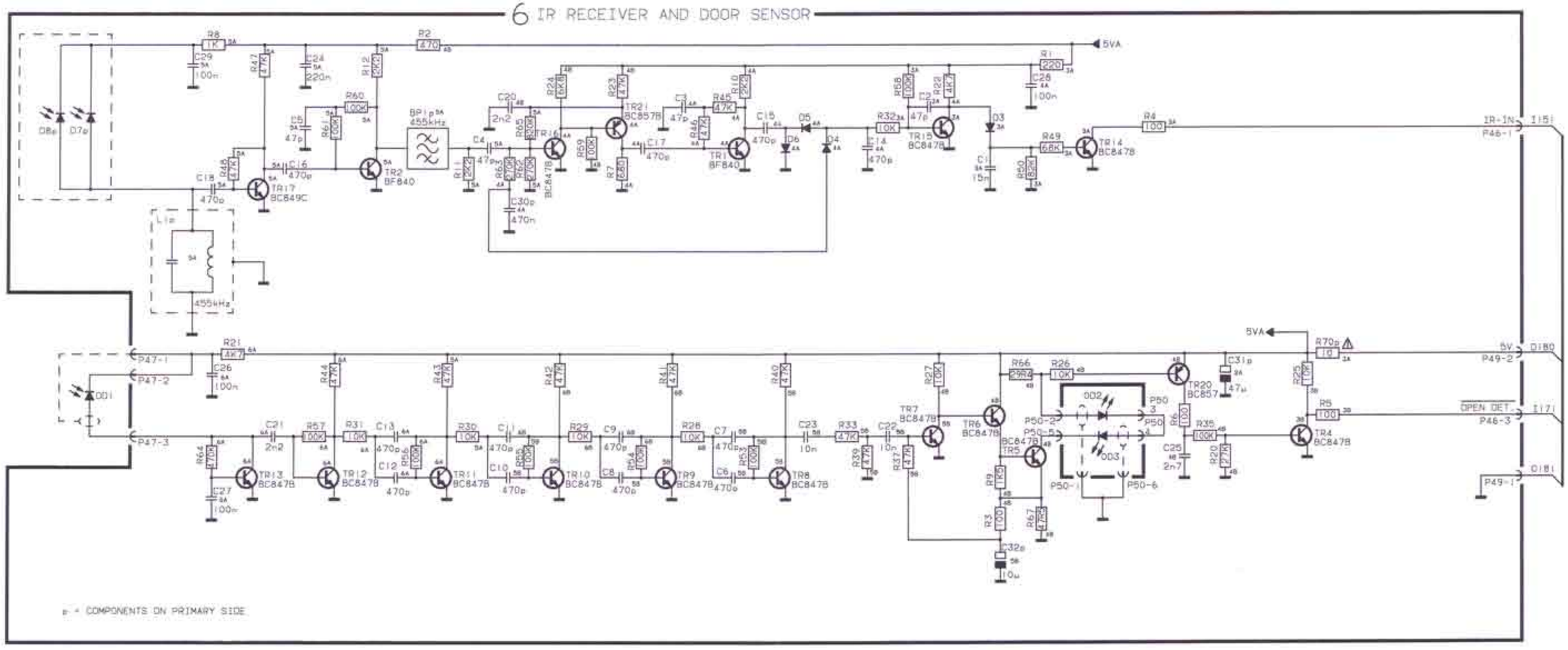
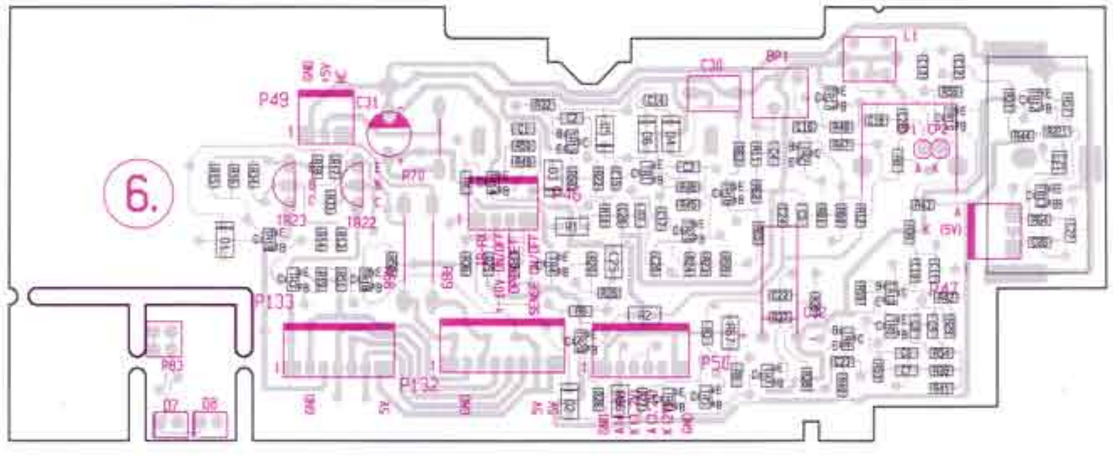


DIAGRAM K IR RECEIVER & DOOR SENSOR



PCB 6



PCB 3

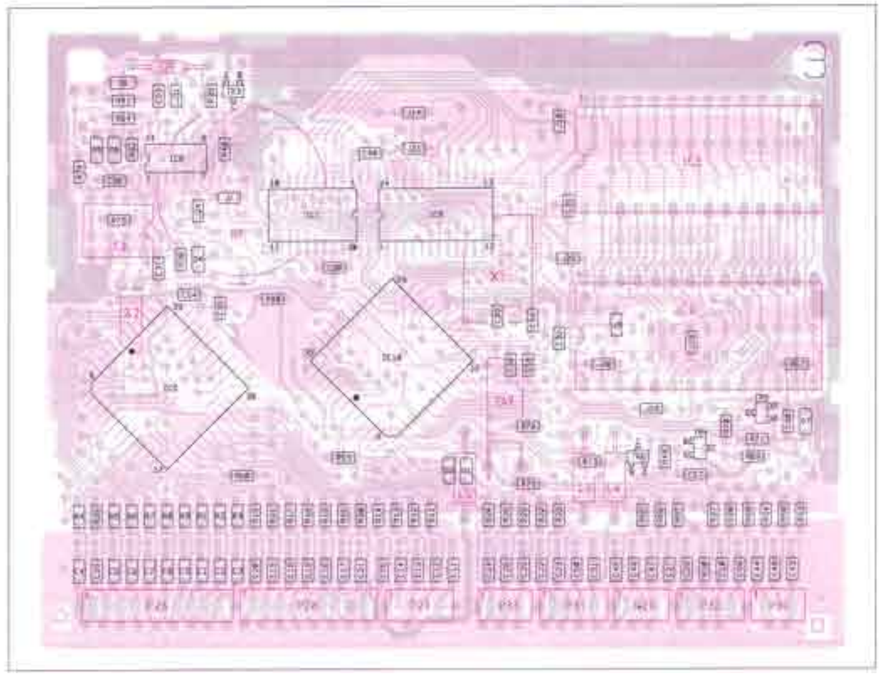


DIAGRAM L DISPLAY AND KEYBOARD

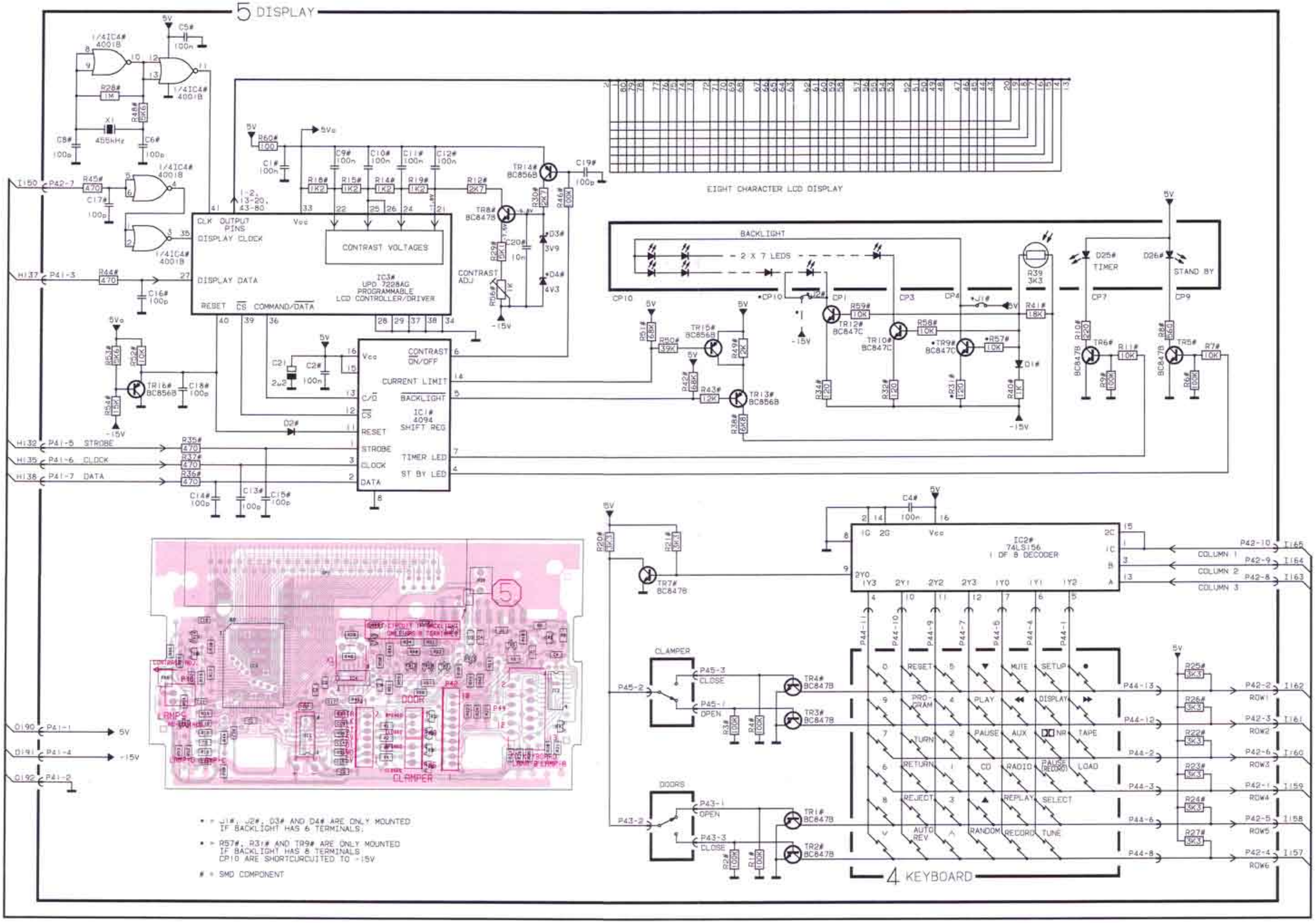
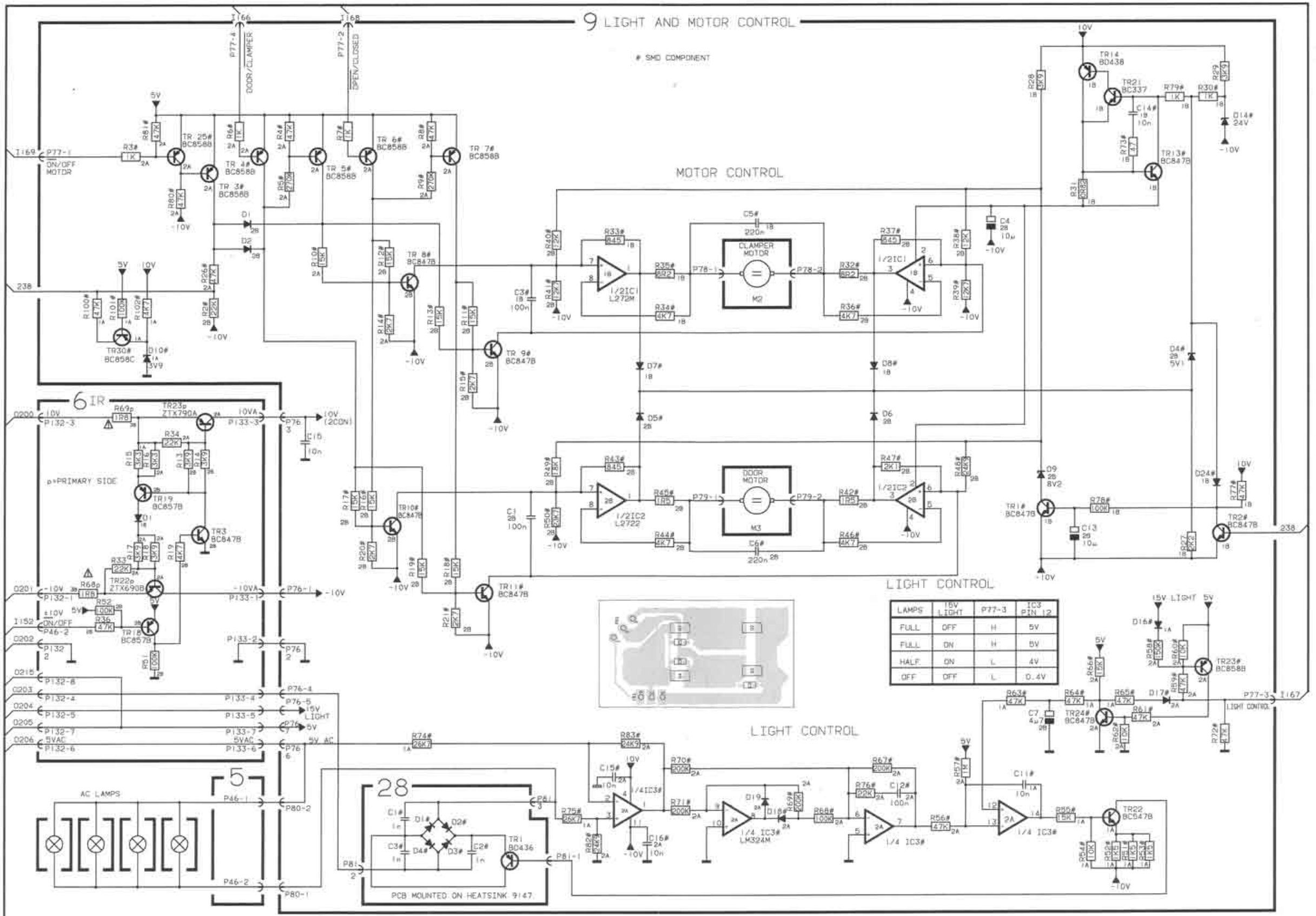
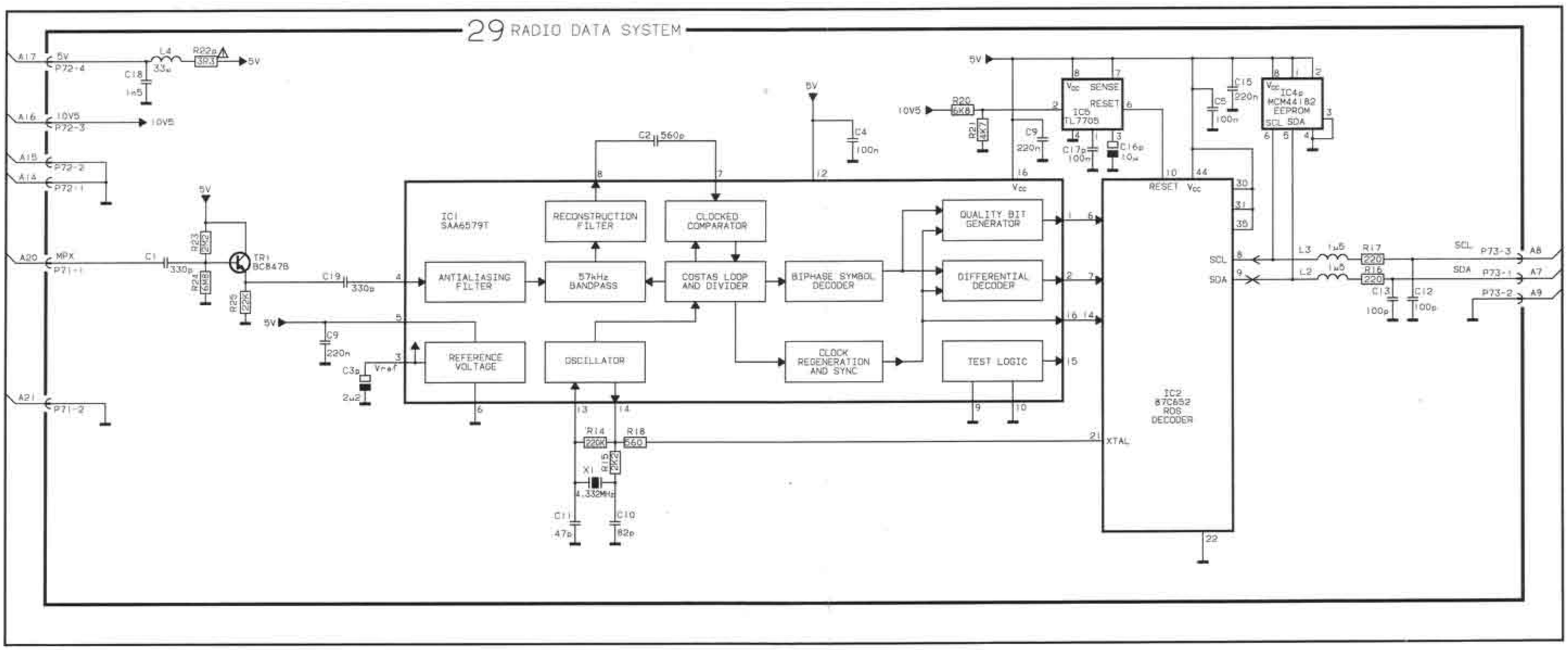


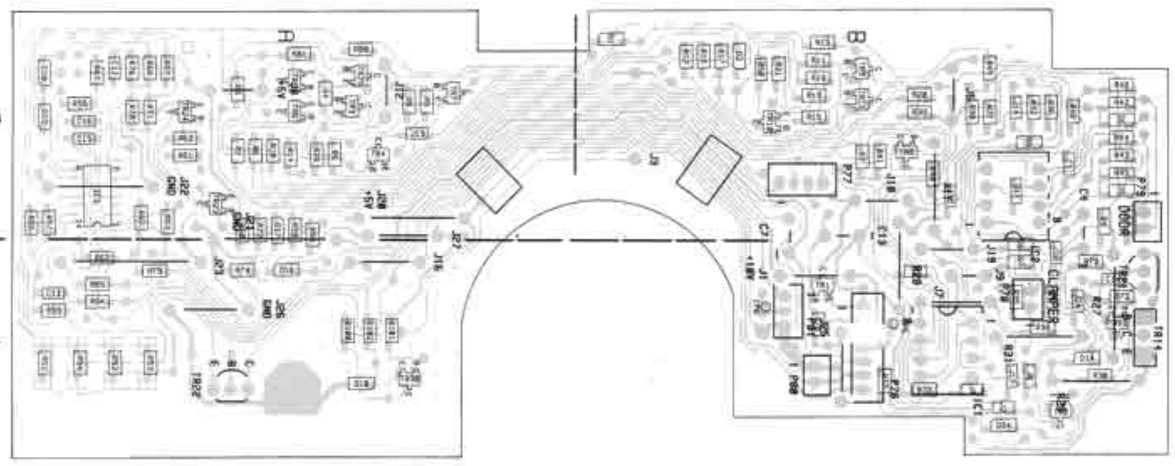
DIAGRAM M LIGHT AND MOTOR CONTROL



LAMPS	15V LIGHT	P77-3	IC3 PIN 12
FULL	OFF	H	5V
FULL	ON	H	5V
HALF	ON	L	4V
OFF	OFF	L	0.4V

DIAGRAM N RADIO DATA SYSTEM





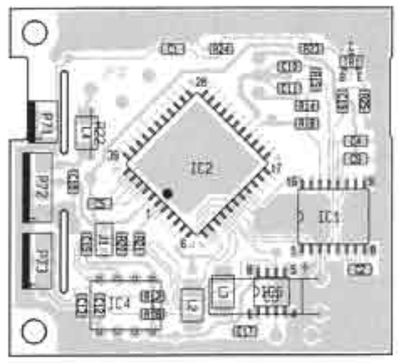
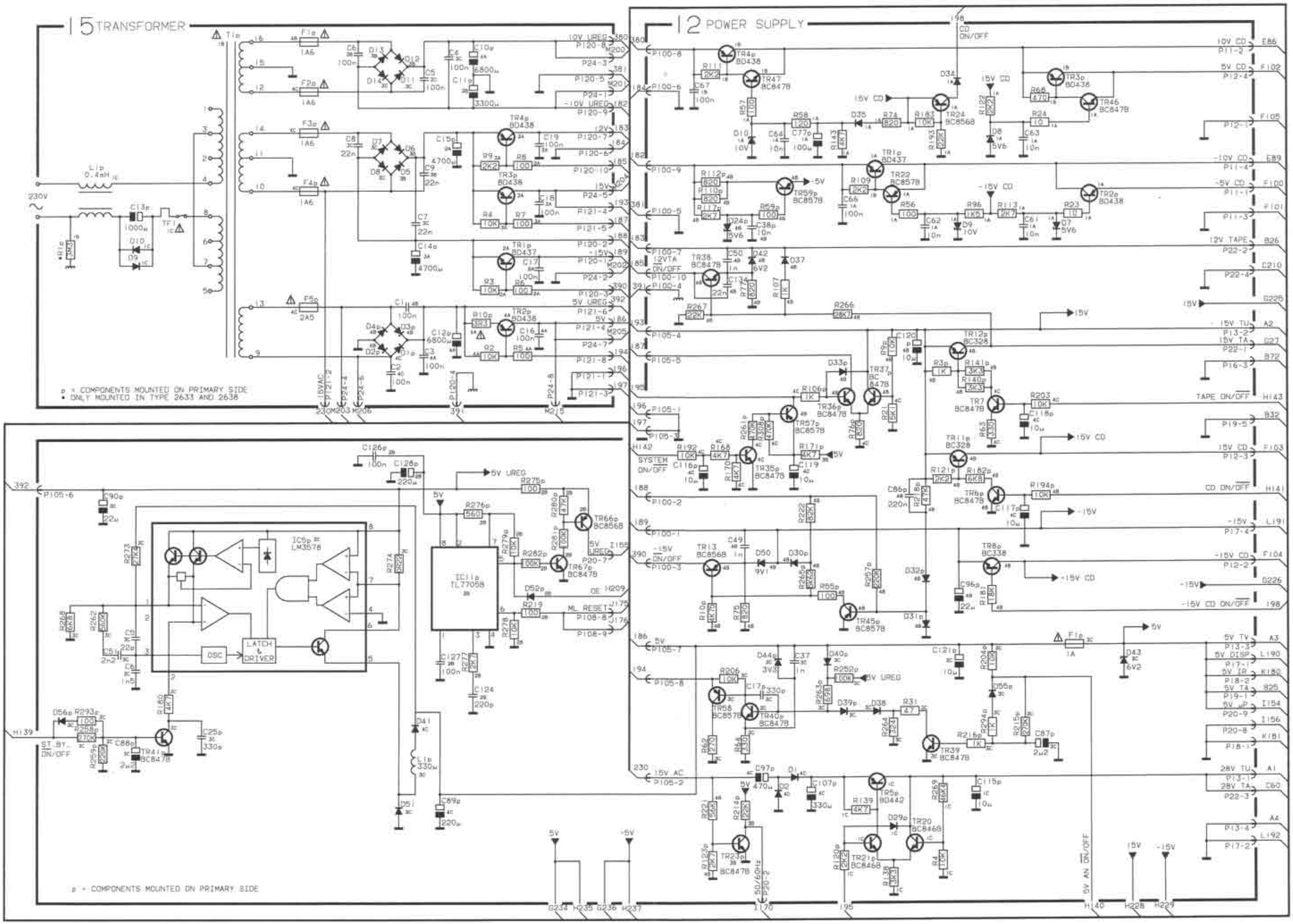
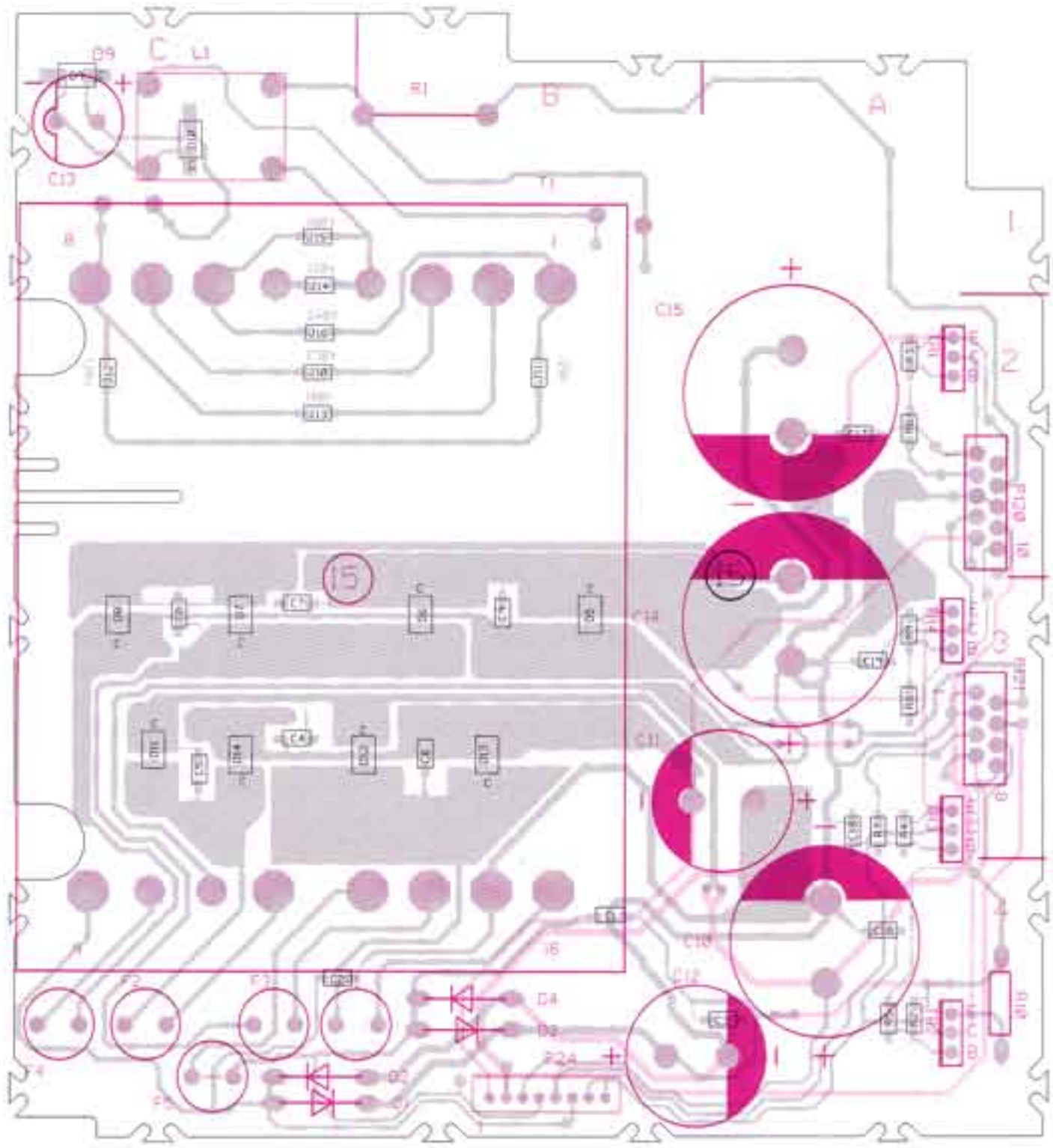


DIAGRAM O POWER SUPPLY

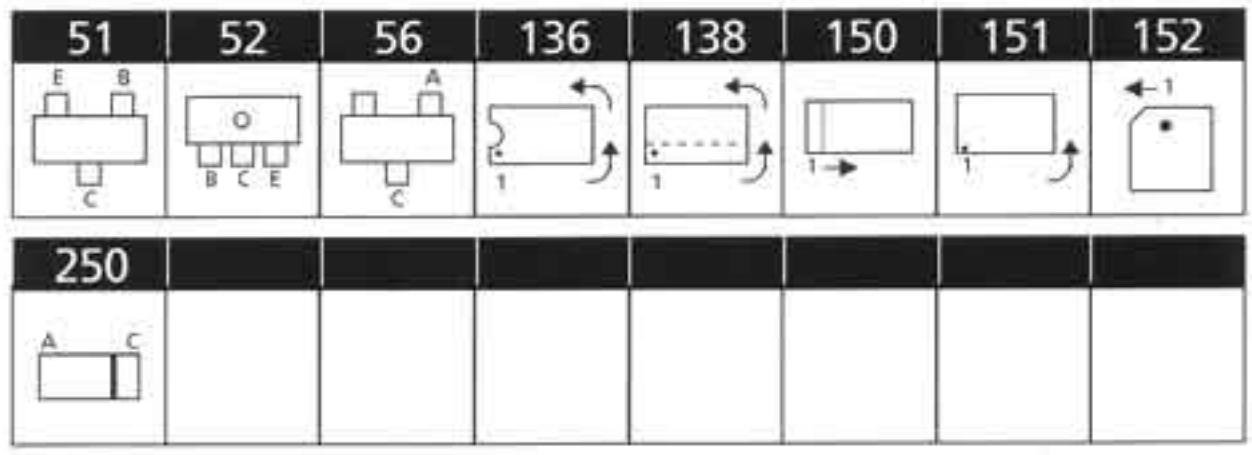


p = COMPONENTS MOUNTED ON PRIMARY SIDE

PCB 15, Transformer



LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 1, 8001413
8001415, type 2634, 3639
FM/AM, RF, IF decoder

IC1Δ	8340995	**136**	LM1865	IC4Δ	8340758	**136**	LA3401
IC2Δ	8341098	**150**	LM358	IC5Δ	8341410	**136**	TEA6200
IC3Δ	8341409	**151**	LC7218M				

TR1	8320755	**051**	BC847B	TR9	8320755	**051**	BC847B
TR2	8320723	**052**	BC868	TR10	8320747	**051**	BC848C
TR3	8320616	**051**	BC858B	TR11	8320755	**051**	BC847B
TR4	8320755	**051**	BC847B	TR12	8320740	**051**	BF840
TR5	8320740	**051**	BF840	TR13	8320755	**051**	BC847B
TR6-	8320755	**051**	BC847B	TR14	8320740	**051**	BF840
TR7				TR15	8320755	**051**	BC847B
TR8	8320747	**051**	BC848C	TR20	8320755	**051**	BC847B

D3	8300482	**250**	LL4148	D8	8300728	**056**	BBY40
D6	8300482	**250**	LL4148				

R026	5370402	2.2kΩ 30% 0.3W	R091	5011857	4.42kΩ 1% 1/4W
R046	5011859	8.25kΩ 1% 1/4W	R100	5370382	47kΩ 30% 0.1W
R047	5011858	7.68kΩ 1% 1/4W	R121	5021017	47Ω 5% 0.14W
R050	5011857	4.42kΩ 1% 1/4W	R130	5020727	18Ω 5% 1W
R087	5011859	8.25kΩ 1% 1/4W	R131	5020881	22Ω 10% 0.3W
R088	5011858	7.68kΩ 1% 1/4W			

C2	4201090	47µF 20% 16V	C30	4000239	33pF 5% 50V
C4	4010132	1nF 10% 50V	C31	4010173	4.7nF 10% 50V
C5	4200625	3.3µF 20% 50V	C32	4010290	22nF 10% 50V
C6	4010173	4.7nF 10% 50V	C34-	4010280	10nF 10% 50V
C7	4000267	3pF ±0,25pF 50V	C36		
C8	4000276	18pF 5% 50V	C37-	4010173	4.7nF 10% 50V
C9	4000283	270pF 5% 50V	C38		
C10	4010280	10nF 10% 50V	C39	4200525	22µF 20% 10V
C11	4000283	270pF 5% 50V	C40	4000287	220nF -20+80% 25V
C12	4000287	220nF -20+80% 25V	C41	4010280	10nF 10% 50V
C13	4201090	47µF 20% 16V	C42	4201090	47µF 20% 16V
C14	4010166	100nF -20+80% 50V	C43	4010132	1nF 10% 50V
C15-	4201090	47µF 20% 16V	C44	4010280	10nF 10% 50V
C16			C46	4200512	1µF 20% 50V
C17	4000287	220nF -20+80% 25V	C47	4000286	470pF 5% 50V
C18	4010170	2.2nF 10% 50V	C48	4200510	10µF 20% 16V
C20	4010132	1nF 10% 50V	C49	4000282	180pF 5% 50V
C21	4000277	22pF 5% 50V	C50	4000287	220nF -20+80% 25V
C22	4010166	100NF -20+80% 50V	C51	4200515	4.7µF 20% 25V
C23-	4010290	22nF 10% 50V	C52	4100260	2.2nF 2,5% 63V
C24			C53	4200515	4.7µF 20% 25V
C26	4000138	33pF 5% 63V	C54	4000281	82pF 5% 50V
C27	4130306	100nF 10% 63V	C55-	4100301	1nF 2.5% 63V
C28	4000357	1.8pF ±0,25pF 50V	C56		
C29	4000280	68pF 5% 50V	C57	4100260	2.2nF 2.5% 63V

C58	4000351	1.5nF 5% 50V	C94	4000287	220nF -20+80% 25V
C59-	4000323	330pF 5% 50V	C95	4000325	560pF 5% 50V
C60			C96	4000287	220nF -20+80% 25V
C61-	4000323	330pF 5% 50V	C97	4000325	560pF 5% 50V
C62			C98	4010132	1nF 10% 50V
C63-	4010132	1nF 10% 50V	C99	4200510	10µF 20% 16V
C67			C100	4200523	0.47µF 20% 50V
C68	4000278	27pF 5% 50V	C101-	4200512	1µF 20% 50V
C69	4000239	33pF 5% 50V	C103		
C70	4000287	220nF -20+80% 25V	C104-	4010170	2.2nF 10% 50V
C71	4200525	22µF 20% 10V	C105		
C72	4130379	270nF 10% 63V	C106	4000287	220nF -20+80% 25V
C73	4200625	3.3µF 20% 50V	C107	4000326	680pF 5% 50V
C74	4010166	100nF 50V	C108	4000287	220nF -20+80% 25V
C75	4010208	82nF 10% 50V	C109	4010280	10nF 10% 50V
C76	4200625	3.3µF 20% 50V	C110	4010173	4.7nF 10% 50V
C77-	4010132	1nF 10% 50V	C111	4000224	15pF 5% 63V
C79			C112	4010132	1nF 10% 50V
C80	4000287	220nF -20+80% 25V	C113	4010157	10nF 10% 50V
C81	4200515	4.7µF 20% 25V	C115	4000275	15pF 5% 50V
C82	4100260	2.2nF 2.5% 63V	C116-	4010132	1nF 10% 50V
C83	4200515	4.7µF 20% 25V	C118		
C84	4000281	82pF 5% 50V	C119	4000351	1.5nF 5% 50V
C85-	4100301	1nF 2.5% 63V	C120	4000280	68pF 5% 50V
C86			C121-	4010166	100nF -20+80% 50V
C87	4100260	2.2nF 2.5% 63V	C122		
C88	4000351	1.5nF 5% 50V	C123-	4010132	1nF 10% 50V
C89	4200129	100µF 20% 16V	C127		
C90	4130240	47nF 10% 63V	C128	4010280	10nF 10% 50V
C91	4010280	10nF 10% 50V	C129	4010157	10nF 10% 50V
C92-	4000286	470pF 5% 50V	C130	4000234	47pF 5% 50V
C93					

L1	8020909	Coil transformer	L6	8020747	Coil 1mH 10%
L2	8020714	Coil 68µH 10%	L7	8020772	Coil 10µH 20%
L3	8020817	Coil 33µH 10%	L8	8022327	Coil 10.7MHz
L4	8020803	Coil 10.7MHz 6%	L10	8022240	Coil 19.5mH 2%
L5	8020802	Coil 10.7MHz			

X1	8090076	Crystal 3.6MHz
X2	8030087	Cer. resonator 456kHz ±1kHz

BP1-	8030219	Crystal 10.7MHz	BP3-	8030090	Cer. filter 10.7MHz
BP2			BP5		

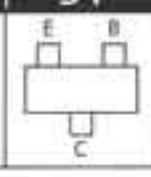
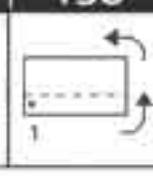
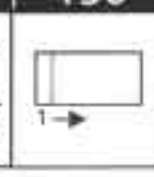
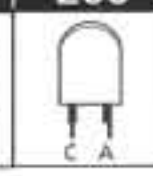
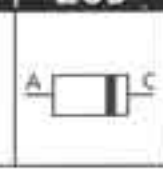
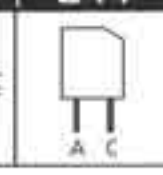
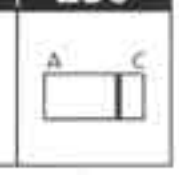
TU1	8050111	Tuner, type 2631, 2632, 2633, 2635, 2636, 2637, 2638, 2640
	8050112	Tuner, type 2634, 2639

P1	7210612	Socket, FM antenne	P7	7220709	Plug, 2 pole
P2	7220724	Plug, 2 pole	P8	7220710	Plug, 3 pole
P3-	7220709	Plug 2 pole	P10	7220711	Plug, 4 pole
P4					
P5-	7220711	Plug, 4 pole			
P6					

PCB 3, 8001761
Microcomputer

IC1Δ	8341217	**136**	74HCT573	IC8Δ	8341419	**150**	74HCT00
IC3*Δ	8342555	**136**	27C512	IC9Δ	8341276	**138**	6116
IC5Δ	8341437	**152**	82C55A	IC10Δ	8341218	**152**	µP 80C32
IC6Δ	8341105	**136**	PCF8583				

TR3-	8320615	**051**	BC848B	TR5-	8320616	**051**	BC858B
TR4				TR6			

19	51	138	150	206	209	244	250
							

Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

D1-	8300482 **250**	LL4148	D5	8300056 **209**	Z1.5V 10% 0.2W
D2			D6-	8300482 **250**	LL4148
D4	8300482 **250**	LL4148	D9		

C1-	4010132	1nF 10% 50V	C43-	4010132	1nF 10% 50V
C29			C47		
C30-	4010166	100nF -20+80% 50V	C49	4200510	10µF 20% 16V
C32			C50-	4000241	100pF 5% 50V
C33-	4000239	33pF 5% 50V	C51		
C34			C53-	4010166	100nF -20+80% 50V
C35-	4010166	100nF -20+80% 50V	C54		
C36			C55-	4010132	1nF 10% 50V
C37	4000219	10pF ±0.5P 50V	C56		
C38	4010166	100nF -20+80% 50V	C57	4000287	220nF -20+80% 25V
C40	4010166	100nF -20+80% 50V	C59	4010166	100nF -20+80% 50V
			C60	4010132	1nF 10% 50V

L3-	8020565	Coil 2.2µH 10%
L5		

X1	8090075	Crystal 12.0MHz
X2	8090078	Crystal 32.768kHz

B1	8700027	Lithium battery

P26	7220717	Plug, 10 pole	P31-	7220711	Plug, 4 pole
P27	7220711	Plug, 4 pole	P32		
P28	7220716	Plug, 9 pole	P33	7220710	Plug, 3 pole
P29-	7220710	Plug, 3 pole			
P30					

PCB 5, 8001309
Display

IC1Δ	8341025 **150**	4094	IC4Δ	8341226 **150**	4001B
IC2Δ	8341418 **138**	74LS156			

TR1-	8320755 **051**	BC847B	TR12	8320936 **051**	BC847C
TR8			TR13-	8320753 **051**	BC856B
TR10	8320936 **051**	BC847C	TR16		

D1-	8300482 **250**	LL4148	D3	8300577 **250**	Z3.9V 2%
D2			D4	8300661 **250**	Z4.3V 2%

R29	5011914	5.1kΩ 1% 1/8W
R49	5012069	2kΩ 1% 1/8W

C1-C2	4010166	100nF -20+80% 50V		C9-C12	4010166	100nF -20+80% 50V	
C4-C5	4010166	100nF -20+80% 50V		C13-C19	4000241	100pF 5% 50V	
C6	4000241	100pF 5% 50V		C20	4010157	10nF 10% 50V	
C8	4000241	100pF 5% 50V		C21	4200517	2.2µF 20% 50V	

X1	8030221	455kHz 0.5%

P41	7220714	Plug, 7 pole		P44	7210853	Socket, 13 pole	
P42	7220717	Plug, 10 pole		P45	7220710	Plug, 3 pole	
P43	7220710	Plug, 3 pole		P46	7220724	Plug, 2 pole	

8001383, Backlight

D1-D13	8330275	LED, green		D26	8330246	LED, red	
D17-D25	8330275	LED, green		D27	8300577	**250**	Z3.9V 2%
				D28	8300661	**250**	Z4.3V 2%

R39	5210006	3.3kW 33% foto

PCB 6, 8001753
IR receiver and door sensor

TR1-TR2	8320740	**051**	BF840	TR18-TR21	8320811	**051**	BC857B
TR3-TR16	8320755	**051**	BC847B	TR22	8321072	**019**	ZTX690B
TR17	8320769	**051**	BC849C	TR23	8321073	**019**	ZTX790A

D1	8300482	**250**	LL4148	0D1	8330145	**244**	880nm Receive
D3-D6	8300482	**250**	LL4148	0D2-0D3	8330237	**206**	880nm Transmit
D7-D8	8330145	**244**	880nm Receive				

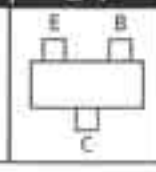
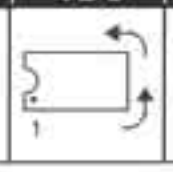
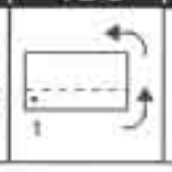
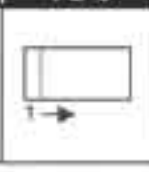
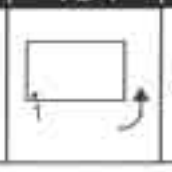
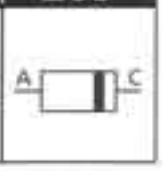
R66	5012067	294Ω 1% 1/8W	R68-R69	5020981	1.8Ω 10% 0.35W
R67	5012068	47.5Ω 1% 1/8W	R70	5021047	10Ω 5% 0.14W

C1	4010257	15nF 10% 50V	C24	4010314	220nF -20+80% 25V
C2-C5	4000408	47pF 5% 50V	C25	4010195	2.7nF 5% 50V
C6-C18	4000420	470pF 5% 50V	C26-C29	4010316	100nF 10% 25V
C20-C21	4010263	2.2nF 10% 50V	C30	4130313	470nF 20% 63V
C22-C23	4010271	10nF 10% 50V	C31	4200688	47µF 20% 50V
			C32	4200510	10µF 20% 16V

L1	8020562	Coil 455kHz

BP1	8030056	455kHz

P46	7220726	Plug, 4 pole	P83	7220693	Plug, 2 pole
P47	7220725	Plug, 3 pole	P132	7220730	Plug, 8 pole
P49	7220725	Plug, 3 pole	P133	7220729	Plug, 7 pole
P50	7220728	Plug, 6 pole			

17	32	51	136	138	150	151	209
							

250							

Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 7, 8004913
Tape

IC1-	8342019	**150**	4066	IC13Δ	8341376	**151**	HA12136
IC2Δ				IC14Δ	8341033	**138**	LF353
IC3Δ	8341033	**138**	LF353	IC15-	8342019	**150**	4066
IC4Δ	8341411	**150**	LM13700	IC17Δ			
IC5Δ	8341033	**138**	LF353	IC18Δ	8341408	**138**	4073
IC6Δ	8342019	**150**	4066	IC20Δ	8341417	**138**	4021
IC7Δ	8340752	**136**	µPC1297CA	IC21-	8341025	**138**	4094
IC8Δ	8341041	**138**	LM324	IC22Δ			
IC10Δ	8341041	**138**	LM324	IC23Δ	8341033	**138**	LF353
IC11-	8342019	**150**	4066				
IC12Δ							

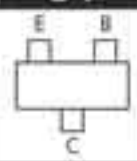
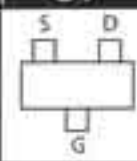
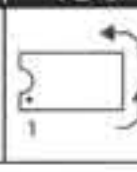
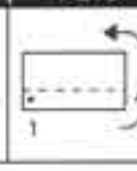
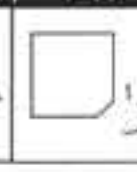
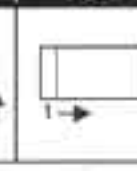
TR1	8320755	**051**	BC847B	TR25	8320755	**051**	BC847B
TR2	8320950	**051**	BC850C	TR28	8320755	**051**	BC847B
TR3	8320768	**051**	BC850B	TR29	8320753	**051**	BC856B
TR4	8320950	**051**	BC850C	TR30-	8320752	**051**	BC817-40
TR5	8320768	**051**	BC850B	TR32			
TR6-	8320755	**051**	BC847B	TR33-	8320753	**051**	BC856B
TR7				TR36			
TR8	8320753	**051**	BC856B	TR37-	8320752	**051**	BC817-40
TR9	8320617	**032**	BD137-10	TR39			
TR10-	8320755	**051**	BC847B	TR40	8320755	**051**	BC847B
TR11				TR41-	8320523	**017**	BC328-25
TR12	8320753	**051**	BC856B	TR42			
TR15	8320753	**051**	BC856B	TR43-	8320755	**051**	BC847B
TR16	8320755	**051**	BC847B	TR45			
TR18-	8320755	**051**	BC847B				
TR20							

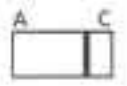
D1	8300409	**209**	BAV20	D19	8300482	**250**	LL4148
D2	8300482	**250**	LL4148	D23-	8300482	**250**	LL4148
D4-	8300482	**250**	LL4148	D24			
D12				D26-	8300409	**209**	BAV20
D13	8300409	**209**	BAV20	D27			
D14	8300482	**250**	LL4148	D28-	8300482	**250**	LL4148
D15	8300726	**250**	Z7.5V 2%	D29			
D16	8300482	**250**	LL4148	D30	8300639	**250**	Z12V 2%

R2	5021226	100kΩ 1% 1/4W	R25	5370382	47kΩ 30% 0.1W
R3	5011792	4.75kΩ 1% 1/8W	R52-	5370403	22kΩ 30% 0.1W
R7	5011870	90.9Ω 1% 1/8W	R53		
R8	5011871	365Ω 1% 1/8W	R89	5020489	10Ω 10% 0.3W
R9	5011849	8.66kΩ 1% 1/8W	R102	5011986	15.4kΩ 1% 1/8W
R13	5370382	47kΩ 30% 0.1W	R103	5021023	9.09kΩ 1% 1/4W
R14	5021226	100kΩ 1% 1/4W	R104	5011752	12.7kΩ 1% 1/8W
R15	5011792	4.75kΩ 1% 1/8W	R105	5011996	8.25kΩ 1% 1/8W
R19	5011849	8.66kΩ 1% 1/8W	R107	5011992	12.1kΩ 1% 1/8W
R20	5011870	90.9Ω 1% 1/8W	R108	5011995	46.4kΩ 1% 1/8W
R21	5011871	365Ω 1% 1/8W	R109	5011899	21.5kΩ 1% 1/8W

R110	5011994	4.02kΩ 1% 1/8W	R198	5370381	10kΩ 30% 0.1W
R112	5011986	15.4kΩ 1% 1/8W	R209	5011986	15.4kΩ 1% 1/8W
R113	5021023	9.09kΩ 1% 1/4W	R233-R234	5011844	2.55kΩ 1% 1/8W
R114	5011752	12.7kΩ 1% 1/8W			
R115	5011996	8.25kΩ 1% 1/8W	R235-R236	5011840	137Ω 1% 1/8W
R117	5011992	12.1kΩ 1% 1/8W			
R118	5011995	46.4kΩ 1% 1/8W	R238	5020770	4.42kΩ 1% 1/4W
R119	5011899	21.5kΩ 1% 1/8W	R239	5020074	15kΩ 1% 1/4W
R120	5011994	4.02kΩ 1% 1/8W	R243-R244	5021119	27Ω 5% 1W
R126	5011838	18kΩ 1% 1/8W			
R135-R136	5011838	18kΩ 1% 1/8W	R248-R249	5021119	27Ω 5% 1W
R159-R164	5370381	10kΩ 30% 0.1W	R266-R267	5011517	22Ω 5% 1W
R167	5370381	10kΩ 30% 0.1W			

C1	4200403	100µF -20+80% 25V	C59	4000163	10pF 5% 63V
C2	4200525	22µF 20% 10V	C60	4200510	10µF 20% 16V
C3	4000283	270pF 5% 50V	C61-C62	4010280	10nF 10% 50V
C4	4000233	220F 5% 50V			
C5	4200515	4.7µF 20% 25V	C63	4200524	10µF 20% 25V
C6	4200625	3.3µF 20% 50V	C64-C65	4010216	22nF 10% 100V
C7	4130315	15nF 5% 63V			
C8	4000351	1.5nF 5% 50V	C66-C67	4010220	100nF 10% 50V
C9	4100236	1nF 5% 63V			
C10	4010280	10nF 10% 50V	C68-C69	4100255	560pF 5% 63V
C11	4000233	220pF 5% 50V			
C12	4200403	100µF -20+80% 25V	C70-C71	4000241	100pF 5% 50V
C13	4200525	22µF 20% 10V			
C14	4000283	270pF 5% 50V	C72-C73	4000344	560pF 5% 50V
C15	4200515	4.7µF 20% 25V			
C16	4130315	15nF 5% 63V	C74	4200631	0.22µF 20% 50V
C17	4100236	1nF 5% 63V	C75	4200600	470µF 20% 16V
C18	4200625	3.3µF 20% 50V	C76-C77	4200515	4.7µF 20% 25V
C19	4000351	1.5nF 5% 50V			
C20	4010280	10nF 10% 50V	C78-C80	4200512	1µF 20% 50V
C21-C22	4200625	3.3µF 20% 50V			
			C81	4200508	22µF 20% 25V
C25-C26	4010196	1.8nF 5% 50V	C82-C83	4130333	220nF 5% 63V
C27-C28	4010259	5.6nF 10% 50V	C84-C85	4130233	220nF 20% 63V
C29-C30	4000290	22nF 10% 50V	C86-C87	4200510	10µF 20% 16V
C31-C32	4100240	5.6nF 5% 63V	C88	4130313	470nF 20% 63V
			C89	4200512	1µF 20% 50V
C35-C36	4130379	270nF 10% 63V	C90	4200508	22µF 20% 25V
			C93	4200517	2.2µF 20% 50V
C37-C38	4200510	10µF 20% 16V	C94-C95	4200600	470µF 20% 16V
C39-C40	4200617	47µF 20% 10V	C96-C97	4200523	0.47µF 20% 50V
C42-C43	4200517	2.2µF20% 50V	C98	4000287	220nF -20+80% 25V
			C99	4130236	330nF 20% 63V
C44-C45	4000327	820pF 5% 50V	C100	4200403	100µF -20+80% 25V
			C101-C102	4010195	2.7nF 5% 50V
C46	4200525	22µF 20% 10V			
C47-C48	4010170	2.2nF 10% 50V	C103-C104	4010132	1nF 10% 50V
C49-C50	4000283	270pF 5% 50V	C105-C106	4000290	22nF 10% 50V
C51	4010220	100nF 10% 50V	C107-C111	4000241	100pF 5% 50V
C52	4200512	1µF 20% 50V			
C53	4200631	0.22µF 20% 50V	C112	4010220	100nF 10% 50V
C54	4010170	2.2nF 10% 50V	C113	4200524	10µF 20% 25V
C55	4200515	4.7µF 20% 25V	C114	4010280	10nF 10% 50V
C56	4200561	10µF 20% 50V	C200-C201	4100243	8.2nF 5% 63V
C57	4200512	1µF 20% 50V			
C58	4100243	8.2nF 5% 63V			

18	32	51	57	136	138	147	150
							

209	250						
							

Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 8, 8005275
CD

L001-L004	8022237		Coil 10mH	L007-L008	8022251		Coil 5mH
L005	8020556		Coil osc. 2.4mH	L009	8020594		Coil 3.3mH 5%
L006	8020552		Coil 10µH 10%	L010	8020905		Coil 3.3mH 5%
P051	7220716		Plug, 9 pole	P056	7220712		Plug, 5 pole
P052	6276893		Wire bundle, 12 pole	P057	7220883		Contact pin, 7 pole
P053	7220712		Plug, 5 pole	P058	7220900		Contact pin, 4 pole
P054	7220710		Plug, 3 pole	P059	7220129		Plug, 2 pole
P055	7220711		Plug, 4 pole				
IC1Δ	8341316	**150**	TDA8808T	IC6Δ	8341152	**136**	TDA1541A
IC2Δ	8341317	**150**	TDA8809T	IC7*Δ	8341450	**136**	MC68HC05C4
IC3Δ	8341318	**147**	SAA7310	IC8Δ	8341682	**136**	TCA 0372
IC4Δ	8340927	**136**	41416C-20	IC9Δ	8341683	**150**	LM837
IC5Δ	8341153	**136**	SAA7220P/B	IC13Δ	8341420	**136**	TCA0372
TR1	8320512	**018**	BC338-25	TR6-TR7	8320616	**051**	BC858B
TR2-TR3	8320724	**057**	BSR56	TR8	8320620	**051**	BF550
TR4	8320616	**051**	BC858B	TR11	8320757	**051**	BC818-40
D1-D2	8300636	**250**	Z7.5V 5%	D6-D7	8300482	**209**	LL4148
D4-D5	8300557	**250**	BYM10 100V				
R1-R2	5012057		6.8kΩ 1% 1/8W	R38-R39	5011852		332Ω 1% 1/4W
R5	5011527		12kΩ 1% 1/8W	R40-R41	5011329		5.6MΩ 10% 1/8W
R6-R7	5021030		3.3Ω 10% 0.3W	R42-R43	5011853		158Ω 1% 1/4W
R8	5011527		12kΩ 1% 1/8W	R44-R45	5011329		5.6MΩ 10% 1/8W
R12	5011744		24kΩ 1% 1/4W	R46-R49	5011632		1.5kΩ 1% 1/4W
R18	5020629		18Ω 5% 0.3W	R50-R51	5011854		2.1kΩ 1% 1/4W
R19	5020877		12Ω 10% 0.25W	R52	5020956		68Ω 5% 0.14W
R21	5011914		5.1kΩ 1% 1/8W	R55	5020956		68Ω 5% 0.14W
R22	5012058		47kΩ 1% 1/4W	R68	5021054		1Ω 10% 0.3W
R23	5020074		15kΩ 1% 1/4W	R69	5020489		10Ω 10% 0.3W
R24	5370324		4.7kΩ 20% 0.1W	R70	5021030		3.3Ω 10% 0.3W
R25	5021030		3.3Ω 10% 0.3W	R71-R72	5021054		1Ω 10% 0.3W
R26	5011571		75Ω 1% 1/8W				
R28	5021030		3.3Ω 10% 0.3W				
R33	5011601		200kΩ 1% 1/8W				
R35	5011913		91kΩ 1% 1/8W				
R37	5010726		4.7kΩ 2% 1/4W				

R89	5011329	5.6MΩ 10% 1/8W	R114	5011631	1kΩ 1% 1/4W
R91	5020114	11kΩ 1% 1/4W	R115-	5012055	750Ω 1% 1/4W
R93	5370327	22kΩ 20% 0.1W	R116		
R95	5021030	3.3Ω 10% 0.3W	R117	5011631	1kΩ 1% 1/4W
R105	5021030	3.3Ω 10% 0.3W			
R112-	5021054	1Ω 10% 0.3W			
R113					

C1	4010220	100nF 10% 50V	C53-	4010220	100nF 10% 50V
C3	4000287	220nF -20+80% 25V	C66		
C4-	4010175	33nF 10% 50V	C67	4000290	22nF 10% 50V
C5			C68	4200551	33µF 20% 16V
C6-	4100243	8.2nF 5% 63V	C71	4000326	680pF 5% 50V
C7			C72-	4000234	47pF 5% 50V
C8	4200551	33µF 20% 16V	C73		
C9	4130308	220nF 10% 63V	C74	4200551	33µF 20% 16V
C10	4130234	470nF 10% 63V	C75-	4000290	22nF 10% 50V
C11-	4000290	22nF 10% 50V	C79		
C13			C81	4010209	47nF 10% 50V
C14	4010157	10nF 10% 50V	C82	4010220	100nF 10% 50V
C15	4010209	47nF 10% 50V	C83	4130308	220nF 10% 63V
C16	4010170	2.2nF 10% 50V	C85	4130234	470nF 10% 63V
C17	4000241	100pF 5% 50V	C86	4010173	4.7nF 10% 50V
C18	4000345	1.0nF 5% 50V	C88-	4200551	33µF 20% 16V
C19	4000286	470pF 5% 50V	C89		
C20	4000233	220pF 5% 50V	C90	4000290	22nF 10% 50V
C22	4130309	330nF 10% 63V	C91-	4000234	47pF 5% 50V
C23	4000287	220nF -20+80% 25V	C92		
C27	4200551	33µF 20% 16V	C93	4000290	22nF 10% 50V
C28	4000290	22nF 10% 50V	C94	4200515	4.7µF 20% 25V
C31-	4000234	47pF 5% 50V	C95	4200551	33µF 20% 16V
C32			C97-	4000290	22nF 10% 50V
C33	4010170	2.2nF 10% 50V	C98		
C34	4200551	33µF 20% 16V	C99	4200517	2.2µF 20% 50V
C35	4000290	22nF 10% 50V	C100	4200516	47µF 20% 16V
C36	4010253	18nF 10% 50V	C101	4100210	1.5nF 5% 63V
C37	4130236	330nF 20% 63V	C102	4100279	2nF 2.5% 63V
C38	4010170	2.2nF 10% 50V	C103-	4100235	680pF 5% 63V
C39	4130304	22nF 10% 63V	C105		
C40			C106	4100279	2nF 2.5% 63V
C41-	4130274	82nF 5% 63V	C107	4100235	680pF 5% 63V
C42			C108	4100210	1.5nF 5% 63V
C43-	4100243	8.2nF 5% 63V	C109	4000345	1nF 5% 50V
C44			C110-	4200551	33µF 20% 16V
C45	4200403	100µF -20+80% 25V	C111		
C47	4200403	100µF -20+80% 25V	C112	4000239	33pF 5% 50V
C51	4200544	22µF 20% 16V	C113	4010157	10nF 10% 50V
C52			C114	4000345	1nF 5% 50V
			C200	4130311	680nF 10% 63V

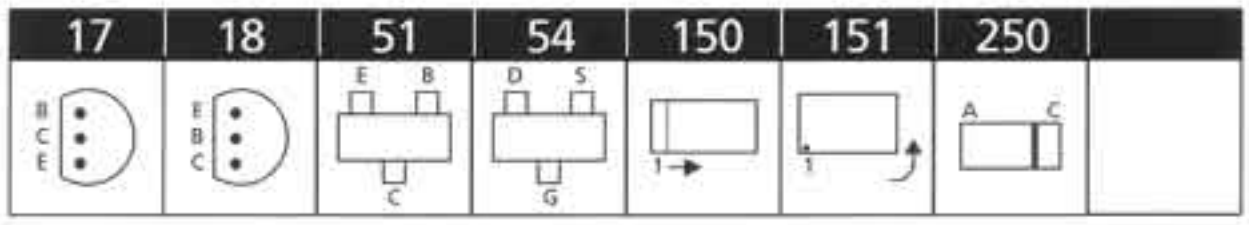
X1	8090058	Crystal 11.2896MHz
X2	8090000	Crystal 4.000MHz

P62	7220710	Plug 3 pole	P66-	7220711	Plug 4 pole
P63-	7220709	Plug 2 pole	P67		
P65			P68	7220710	Plug 3 pole

PCB 09, 8001550
Light and motor control

IC1Δ	8340605	**136**	L272M	IC3Δ	8341041	**138**	LM324
IC2Δ	8341352	**136**	L2722				

TR1-	8320755	**051**	BC847B	TR8-	8320755	**051**	BC847B
TR2				TR11			
TR3-	8320616	**051**	BC858B	TR13	8320755	**051**	BC847B
TR7				TR14	8320425	**032**	BD436
				TR21	8320507	**018**	BC337-25



Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

TR22	8320497	**018**	BC547B	TR25	8320616	**051**	BC858B
TR23	8320616	**051**	BC858B	TR30	8320616	**051**	BC858B
TR24	8320755	**051**	BC847B				

D1-	8300482	**250**	LL4148	D10	8300577	**250**	Z3.9V 2%
D2				D14	8300772	**250**	Z24V 5% 0.4W
D4	8300774	**250**	Z5.1V 5% 0.5W	D16-	8300482	**250**	LL4148
D5-	8300482	**250**	LL4148	D19			
D8				D24	8300482	**250**	LL4148
D9	8300723	**250**	Z8.2V 2%				

R32	5011845	8.2Ω	1% 1/4W	R48	5011598	24.9kΩ	1% 1/8W
R33	5011834	845Ω	1% 1/8W	R49	5011838	18kΩ	1% 1/8W
R35	5011845	8.2Ω	1% 1/4W	R50	5011760	23.7kΩ	1% 1/8W
R37	5011834	845Ω	1% 1/8W	R67	5011601	200kΩ	1% 1/8W
R38	5011527	12kΩ	1% 1/8W	R68	5011600	100kΩ	1% 1/8W
R39	5011752	12.7kΩ	1% 1/8W	R69-	5011601	200kΩ	1% 1/8W
R40	5011527	12kΩ	1% 1/8W	R71			
R41	5011752	12.7kΩ	1% 1/8W	R74-	5011595	26.7kΩ	1% 1/8W
R42	5021151	1.5Ω	1% 1/4W	R75			
R43	5011834	845Ω	1% 1/8W	R78	5011600	100kΩ	1% 1/8W
R45	5021151	1.5Ω	1% 1/4W	R82-	5011598	24.9kΩ	1% 1/8W
R47	5011854	2.1kΩ	1% 1/4W	R83			
				R101	5011600	100kΩ	1% 1/8W

C1	4010220	100nF	10% 50V	C11	4010280	10nF	10% 50V
C3	4010220	100nF	10% 50V	C12	4010166	100nF	-20+80% 50V
C4	4200524	10µF	20% 25V	C13	4200524	10µF	20% 25V
C5-	4000287	220nF	-20+80% 25V	C14-	4010157	10nF	10% 50V
C6				C16			
C7	4200515	4.7µF	20% 25V				

P76	7220714	Plug 7 pole		P78-	7220709	Plug 2 pole	
P77	7220711	Plug 4 pole		P80			
				P81	7220710	Plug 3 pole	

PCB 12, 8001833
Power supply and Pre-Amp.

IC1	8341025	4094		IC6	8341231	LF347	
IC2	8341059	4052		IC7	8341022	4558	
IC3	8341025	4094		IC8	8340205	LF347	
IC4	8342238	TDA7318		IC10	8341022	4558	
IC5	8341225	LM3578		IC11	8341747	TL7705BCD	

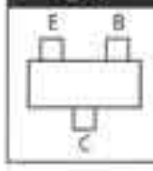
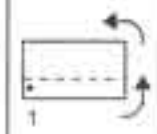
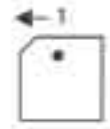
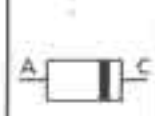
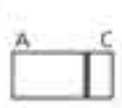
TR6-	8320755	**051**	BC847B	TR15-	8320811	**051**	BC857B
TR7				TR16			
TR8-	8320512	**018**	BC338-25	TR17-	8320755	**051**	BC847B
TR9				TR19			
TR10-	8320523	**017**	BC328-25	TR20	8320816	**051**	BC846B
TR12				TR21			
TR13	8320753	**051**	BC856B	TR22	8320811	**051**	BC857B
TR14	8320755	**051**	BC847B	TR23	8320755	**051**	BC847B
				TR24	8320753	**051**	BC856B

TR25-TR33	8320755	**051**	BC847B	TR54-TR55	8320856	**054**	2N7002
TR34	8320936	**051**	BC847C	TR56	8320899	**054**	BSS84
TR35-TR41	8320755	**051**	BC847B	TR57-TR59	8320811	**051**	BC857B
TR42-TR45	8320811	**051**	BC857B	TR60 TR63	8321080	**051**	FMMT491A
TR46-TR47	8320755	**051**	BC847B	TR64	8320811	**051**	BC857B
TR48-TR49	8320759	**051**	BC817-25	TR65	8320941	**051**	2SC4213
TR50-TR53	8320811	**051**	BC857B	TR66	8320753	**051**	BC856B
				TR67	8320755	**051**	BC847B
				TR68	8320941	**051**	2SC4213

D1-D2	8300907	**250**	GF1B 100V 1A	D41	8300914	**250**	SS14
D3-D6	8300520	**250**	Z6.8V 5%	D42-D43	8300644	**250**	Z6.2V 2%
D7-D8	8300562	**250**	Z5.6V 2%	D44	8300645	**250**	Z3.3V 2%
D9-D10	8300605	**250**	Z10V 5%	D45	8300677	**250**	Z4.7V 5%
D11-D23	8300606	**250**	LL4448	D46-D47	8300723	**250**	Z8.2V 2%
D24	8300562	**250**	Z5.6V 2%	D48-D49	8300726	**250**	Z7.5V 2%
D25-D35	8300606	**250**	LL4448	D50	8300762	**250**	Z9.1V 2%
D36	8300607	**250**	Z3.3V 5%	D51	8300914	**250**	SS14 SMD
D37-D40	8300606	**250**	LL4448	D52	8300482	**250**	LL4148
				D55-D56	8300606	**250**	LL4448

R4	5011557		10kΩ 1% 1/8W	R263	5011982		698Ω 1% 1/8W
R8	5011730		10MΩ 10% 1/8W	R264	5011983		324Ω 1% 1/8W
R9	5011557		10kΩ 1% 1/8W	R265	5011984		5.62kΩ 1% 1/8W
R10	5011792		4.75kΩ 1% 1/8W	R266	5011987		28.7kΩ 1% 1/8W
R11-R12	5011599		49.9kΩ 1% 1/8W	R267	5011988		22kΩ 1% 1/8W
				R268	5012057		6.8kΩ 1% 1/8W
R13-R16	5011632		1.5kΩ 1% 1/4W	R269	5012317		46.5kΩ 1% 1/10W
				R271-R272	5012331		10kΩ 1% 1/10W
R17-R18	5011912		1.2kΩ 1% 1/8W	R273	5012350		27.4kΩ 1% 1/10W
R19-R21	5011914		5.1kΩ 1% 1/8W				

C1-C4	4000233		220pF 5% 50V	C38	4010157		10nF 10% 50V
				C39	4010237		1nF 20% 50V
C5	4000277		22pF 5% 50V	C40-C41	4010262		1.8nF 10% 50V
C6	4000351		1.5nF 5% 50V				
C7	4000412		100pF 5% 50V	C42-C43	4010269		6.8nF 10% 50V
C8	4000381		820pF 5% 50V				
C9-C14	4000408		47pF 5% 50V	C44-C45	4010271		10nF 10% 50V
C15-C16	4000412		100pF 5% 50V	C48-C50	4010237		1nF 20% 50V
C17	4000418		330pF 5% 50V	C51	4010263		2.2nF 10% 50V
C18-C24	4000416		220F 5% 50V	C52-C56	4010271		10nF 10% 50V
C25	4000418		330pF 5% 50V	C59-C65	4010271		10nF 10% 50V
C26	4000420		470pF 5% 50V				
C27-C28	4000457		1.5nF 10% 50V	C66-C67	4010274		100nF -20+80% 25V
C29	4000420		470pF 5% 50V	C68	4010314		220nF -20+80% 25V
C30-C33	4000461		1nF 5% 50V	C69	4010271		10nF 10% 50V
				C70-C72	4010316		100nF 10% 25V
C34	4010132		1nF 10% 50V				
C35	4010209		47nF 10% 50V	C73-C76	4130307		150nF 10% 63V
C36	4000461		1nF 5% 50V				
C37	4010132		1nF 10% 50V	C77	4200628		100µF 20% 16V

51	138	152	209	250			
							

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Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

C78	4010271 10nF 10% 50V	C107	4201105 330µF 20% 63V
C79	4200824 22µF 20% 50V	C108-C109	4201171 1µF 50V
C80-C81	4010271 10nF 10% 50V	C110	4201173 10µF 20% 50V
C82-C84	4010272 22NF -20+80% 50V	C111-C112	4201170 0.47µF 20% 50V
C85	4010274 100nF -20+80% 25V	C113-C121	4201173 10µF 20% 50V
C86	4010314 220nF -20+80% 25V	C122-C123	4201174 2.2µF 20% 50V
C87-C88	4201174 2.2µF 20% 50V	C124	4000287 220nF -20+80% 25V
C89	4200760 220µF -20+50% 16V	C125	4010272 22nF -20+80% 50V
C90	4200824 22µF 20% 50V	C126-C127	4010274 100nF -20+80% 25V
C91-C95	4201173 10µF 20% 50V	C128	4200961 220µF 20% 10V
C96	4200824 22µF 20% 50V	C129-C133	4010237 1nF 20% 50V
C97	4200993 470µF 20% 50V	C134	4000290 22nF 10% 50V
C98-C106	4201173 10µF 20% 50V		

F001	6604009 Fuse 1A 250V		

L001	8020808 Coil 330µH	L004-L007	8021003 Coil 100µH 10%
L002-L003	8020821 Coil 2.2µH		

P001	7210418 Socket, 7 pole	P020	7220716 Plug, 9 pole
P002-P003	7210689 Socket, 8 pole	P021	7220709 Plug, 2 pole
P004	7210904 Socket, 16 pole	P022	7220711 Plug, 4 pole
P011-P013	7220711 Plug, 4 pole	P023	7220710 Plug, 3 pole
P014-P015	7220709 Plug, 2 pole	P025	7220711 Plug, 4 pole
P016	7220712 Plug, 5 pole	P100	7211056 Socket, 10 pole
P017	7220714 Plug, 7 pole	P103-P104	7220711 Plug, 4 pole
P018	7220710 Plug 3 pole	P105	7211055 Socket, 8 pole
P019	7220712 Plug 5 pole	P107	7220711 Plug, 4 pole
		P108	7220719 Plug, 12 pole

PCB 13, 8001769
Master Link Microcomputer

IC1Δ	8341217 **138** 74HCT573	IC4Δ	8341218 **152** µP 80C32
IC2*Δ	8342513 **152** 27C512	IC5Δ	8341419 **138** 74HCT00
IC3Δ	8341276 **138** 6116		

TR1	8320755 **051** BC847B		

D1	8300482 **250** LL4148		

C1-C6	4010274 100nF -20+80% 25V	C7-C8	4000401 12pF 5% 50V

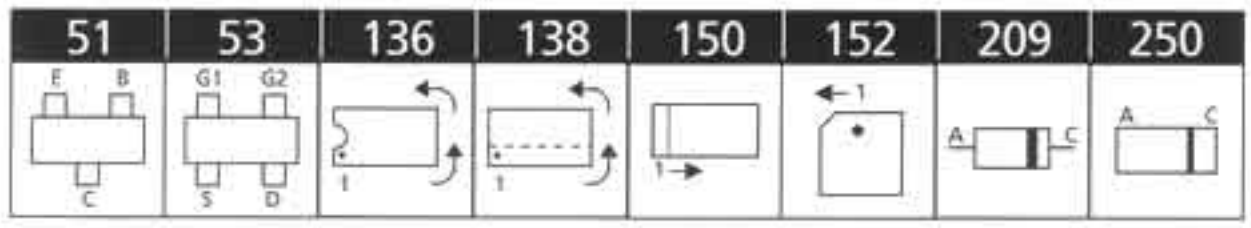
C9- C17	4000424	1nF 5% 50V			
C18	4010274	100nF -20+80% 25V			
L1	8020609	Coil 3.3µH 20%			
X1	8090146	Crystal 11.0592MHz			
P130	7221127	Plug, 12 pole			
P131	7221131	Plug, 4 pole			

PCB 14, 8001736
Master Link Audio interface

IC1- IC7Δ	8341022	**138**	4558	IC8- IC10Δ	8342019 **138** 4066
TR3	8320811	**051**	BC857B	TR6	8320811 **051** BC857B
TR4- TR5	8320755	**051**	BC847B		
R2	5011841	11.8kΩ 1% 1/8W		R14- R15	5011557 10kΩ 1% 1/8W
R4	5011841	11.8kΩ 1% 1/8W			
R5- R6	5011531	5.9kΩ 1% 1/8W		R19- R20	5011557 10kΩ 1% 1/8W
R8	5011841	11.8kΩ 1% 1/8W		R23- R26	5011571 75Ω 1% 1/8W
R10	5011841	11.8kΩ 1% 1/8W			
R11- R12	5011531	5.9kΩ 1% 1/8W			
C1- C2	4000277	22pF 5% 50V		C11- C14	4010166 100nF -20+80% 50V
C3- C4	4000241	100pF 5% 50V		C100- C101	4000345 1nF 5% 50V
C6- C7	4000241	100pF 5% 50V			

PCB 15, 8001834
Transformer

D1- D4	8300023	**209**	1N4002	D5- D14	8300907 **250** GF1B 100V
R010	5021030	3.3Ω 10% 0.30W			
C1 C6	4010166	100F -20+80% 50V		C13	4200821 1000µF -20+50% 6.3V
				C14- C15	4201098 4700µF 20% 35V
C7- C9	4010216	22nF 10% 100V		C16- C19	4010166 100nF -20+80% 50V
C10	4201111	6800µF 20% 16V			
C12	4201316	6800µF 20% 16V			
F1- F4	6600065	Fuse 1.6A 250V		F5	6600067 Fuse 2.5A 250V
L1	8022295	Coil 2x0.4mH			
T1	8013501	Trafo			
P24	7220715	Plug 8 pole			7219087 Mains socket



Resistors not referred to are standard, see page 3-14.
Δ indicates that static electricity may destroy the component.
** Specially selected or adapted sample.*

PCB 17, Tuner
8050111
8050112, type 2634, 2639

• *Only in type* 2634, 2639

TR1-TR2	8320766	**053**	BF995	TR3-TR4	8320672	**051**	BFS20

D1-D4	8300301	**209**	BB204B

R30-R31	5011859	8.25kΩ 1% 1/4W	R32-R34	5370253	47kΩ 20% 0.1W

C1	4000331	6.8pF ±0.25pF 50V	C14	4010157	10nF 10% 50V
C1•	4000275	15pF 5% 50V	C16	4000332	8.2pF ±0.5pF 50V
C2	4000257	27pF 5% 50V	C17-C18	4000260	5pF ±0.5pF 50V
C3-C6	4010132	1nF 10% 50V	C18•	4000228	12pF 5% 50V
C7	4000257	27pF 5% 50V	C19	4010132	1nF 10% 50V
C8	4000332	8.2pF ±0.5pF 50V	C21	4000275	15pF 5% 50V
C8•	4000275	15pF 5% 50V	C22	4000228	12pF 5% 50V
C9	4000258	4pF ±0.25 50V	C23	4010132	1nF 10% 50V
C9•	4000228	12pF 5% 50V	C25	4000294	0.5pF ±0.25pF 50V
C10	4000330	5.6pF ±0.5pF 50V	C27-C29	4000233	220pF 5% 50V
C12	4010132	1nF 10% 50V			
C13	4000231	68pF 5% 50V			

L1	6850158	Coil 70nH	L6	8020632	Coil 0.68µH 20%
L2	6850157	Coil 115nH	L7	8020567	Coil 10.7MHz
L3	8020577	Coil 2.2µH 10%	L8	6850159	Coil 100nH
L4-L5	6850157	Coil 115nH			

P001	7220129	Plug, 2 pole	P003	7220210	Plug, 4 pole
P002	7220212	Plug, 3 pole			

PCB 18, 8001817
Headphone

PCB 28, 3358279
Light supply

D1-D4	8300557	**250**	BYM10

C1-C3	4000345	1nF 5% 50V

PCB 29, 8001781
RDS

IC1	8342568	**138**	SAA6579T	IC4	8341439	**136**	MCM44182
IC2	8341578	**152**	87C652	IC5	8341612	**150**	TL7705

TR1	8320755	**051**	BC847B

R22	5021030	3.3Ω 0.3W		
C1	4000418	330pF 5% 50V	C12-C13	4000412 100pF 5% 50V
C2	4000421	560pF 5% 50V		
C3	4200517	2.2µF 20% 50V	C15	4010314 220nF -20+80% 25V
C4-C5	4010274	100nF -20+80% 25V	C16	4200826 10µF 20% 16V
			C17	4010274 100nF -20+80% 25V
C9	4010274	100nF -20+80% 25V	C18	4010261 1.5nF 10% 50V
C10	4000411	82pF 5% 50V	C19	4000418 330pF 5% 50V
C11	4000408	47pF 5% 50V		
L2-L3	8020816	Coil 1.5µH		
L4	8020817	Coil 33µH		
X1	8090121	4.332MHz		
P71	7220709	Plug, 2 pole		
P72	7220711	Plug, 4 pole		
P73	7220710	Plug, 3 pole		

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LIST OF ELECTRICAL PARTS

Standard Resistors:

Resistors 5% 1/2W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5010255	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3	5011860	5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011347	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

Resistors SMD 2% 1/8W
SMD 5% 1/8W

Glue dots, approx. 200, part no. 3181932

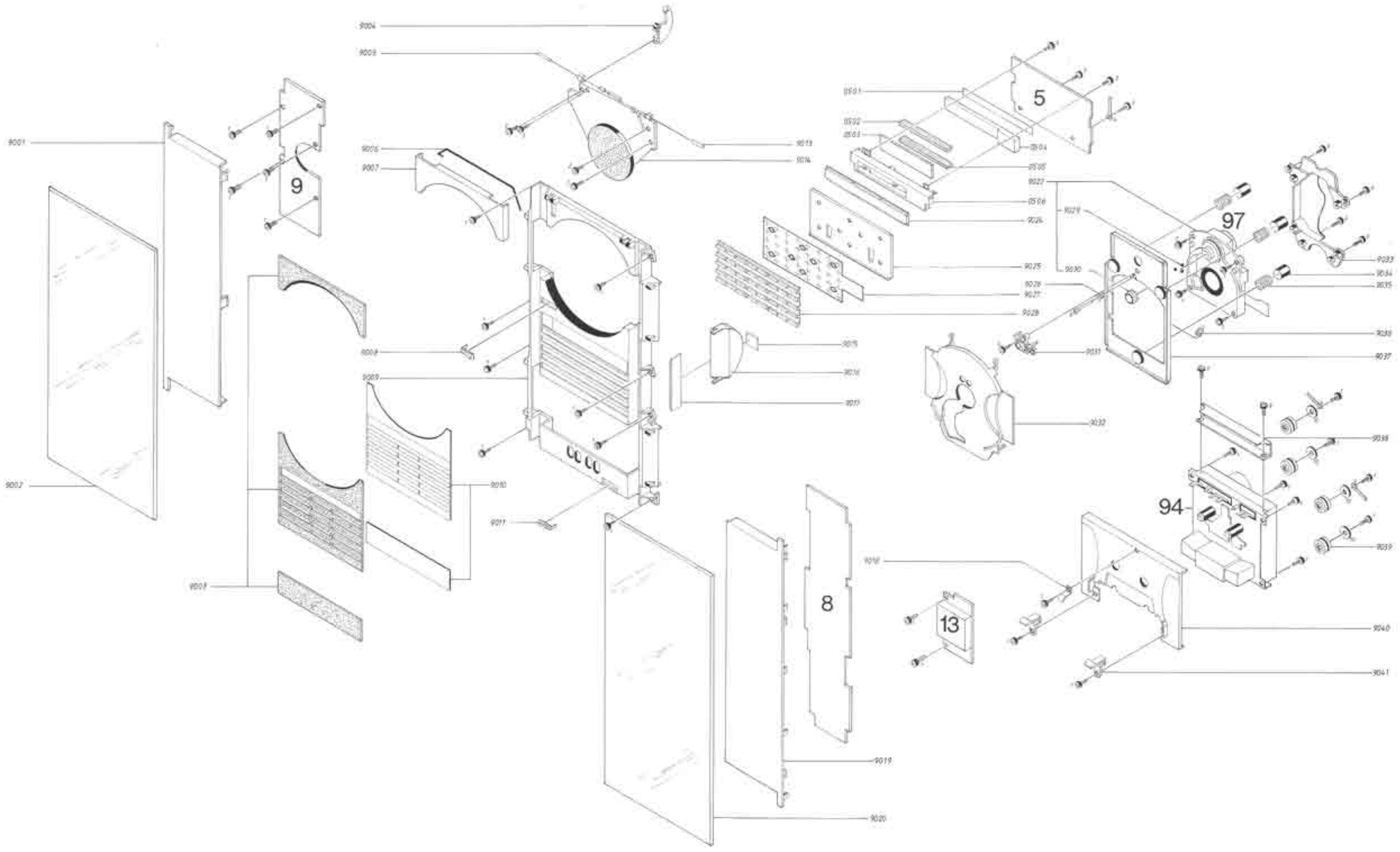
	5% x1	2% x10	2% x100	2% x1k	2% x10k	2% x100k	5% x1M	2% x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

Resistors SMD 5% 1/10W

Glue dots, approx. 200, part no. 3181932

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
0.0	6000072							
1.0		5011920	5011932	5011944	5011956	5011968	5011980	5012275
1.2	5012326	5011921	5011933	5011945	5011957	5011969	5012267	
1.5	5012235	5011922	5011934	5011946	5011958	5011970	5012268	
1.8		5011923	5011935	5011947	5011959	5011971	5011989	
2.2		5011924	5011936	5011948	5011960	5011972	5012220	
2.7		5011925	5011937	5011949	5011961	5011973	5012269	
3.3		5011926	5011938	5011950	5011962	5011974	5012261	
3.9		5011927	5011939	5011951	5011963	5011975	5012270	
4.7		5011928	5011940	5011952	5011964	5011976	5012271	
5.6		5011929	5011941	5011953	5011965	5011977	5012272	
6.8		5011930	5011942	5011954	5011966	5011978	5012273	
8.2		5011931	5011943	5011955	5011967	5011979	5012274	

EXPL. VIEW, FRONT



4 - 2
LIST OF MECHANICAL PARTS
4 - 2

LIST OF MECHANICAL PARTS
FRONT

05modul	8001309	Display
0501	8001383	Backlight
0502	7500272	Contact rubber
0503	8330259	Contrast screen
0504	3131365	Housing with tape
0505	2574078	Rubber support
0506	3151256	Holder

08modul	8005275	CD
	8001384	Connector PCB

09modul	8001550	Light and motor control

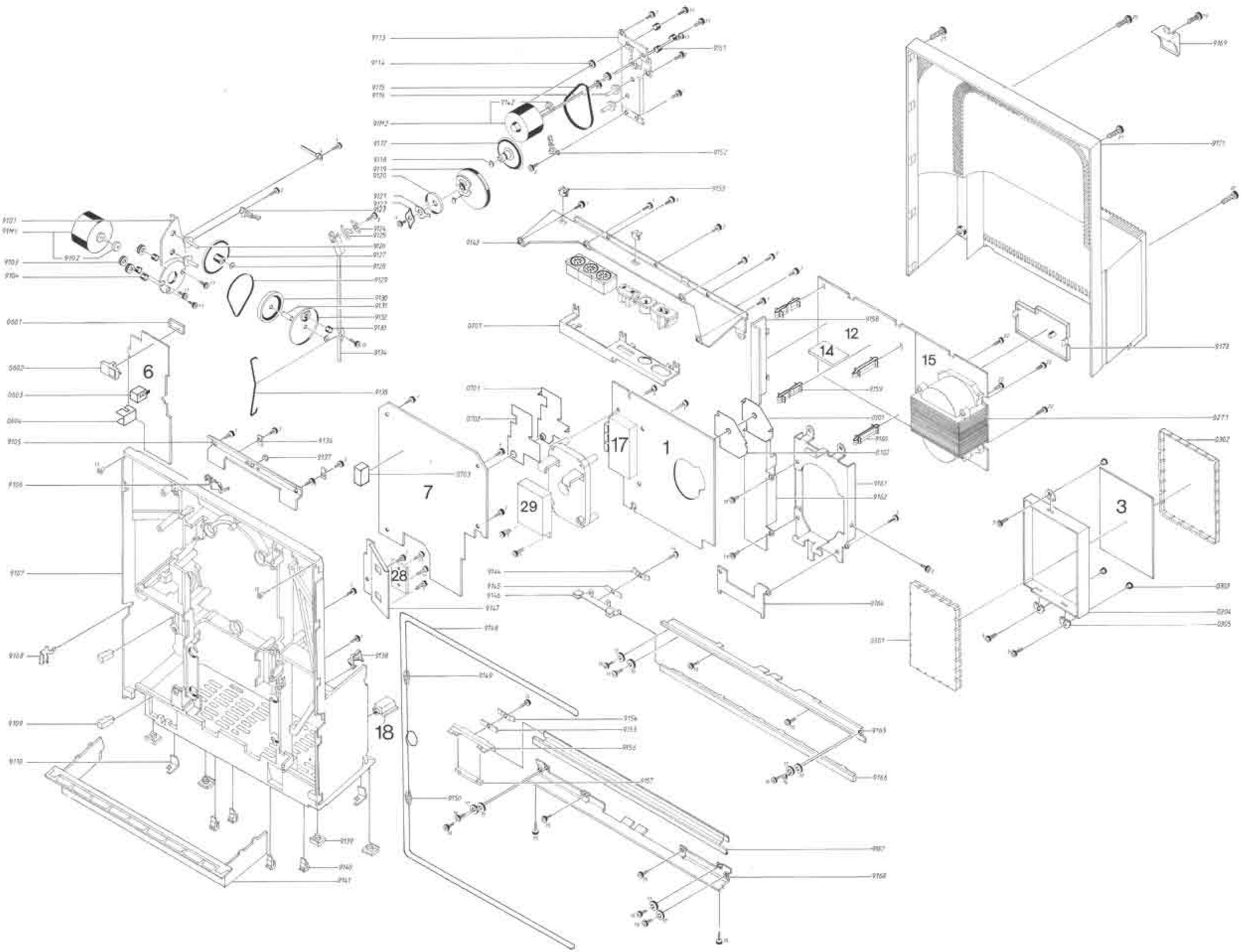
13modul	8001769	Master Link Microcomputer
	3162339	Cover

9001	3162320	Cover, left
9002	3162330	Glass, left
9003	3904146	Alu foil with tape
9004	3017028	Wheel
9005	2830111	Cylinder pin
9006	2819251	Spring
9007	3164877	Cover
9008	2816257	Ground spring
9009	3451167	Front piece with alufoil
9011	2816257	Ground spring
9013	2830111	Cylinder pin
9014	3152726	Clamper
9015	8230100	Print with lamp
9016	3131356	Light cabinet
	8230100	Lamp, sidelight
9017	3322145	Window
9018	2816256	Spring
9019	3162319	Cover, right
9020	3162331	Glass, right
9022	8420172	CD mechanism
9024	3322156	Window
9025	2572045	Spacer
	3170310	Nomex
9026	2812128	Spring
9027	7500270	Contact spring
9028	2776375	Set of buttons
9029	2917025	Ball
9030	2311036	Clip
9031	3152764	Holder
9032	3162338	Cover
9033	3300121	Screen
9034	3333017	Rubber damping
9035	2812132	Compression spring
9036	2810254	Tension spring
9037	3112332	Chassis
9038	3162342	Cover
9039	2938277	Bushing
9040	3162337	Cover
9041	2816255	Spring

94	8422070	Tape mechanism

97	8420172	CD mechanism

EXPL.VIEW, CHASSIS



CHASSIS

01modul	8001413	FM/AM	0101	3302504	Screen
	8001415	FM/AM, type 2634, 2639	0102	3170293	Insulation piece
03modul	8001761	Microcomputer	0303	2938281	Bushing
0301	3162328	Lid, small	0304	3322130	Frame
0302	3162327	Lid, large	0305	2641140	Spacer
06modul	8001753	IR Receiver and door sensor	0602	3300123	Screen, outer
			0603	3304135	Shielded box
0601	3300124	Screen, inner	0604	3300129	Screen
07modul	8004913	Tape	0702	3170295	Insulation piece
	8001385	Tape potentiometer	0703	3302513	Screen
0701	3302500	Screen			
12modul	8001833	Power supply and Pre-Amp.		7210851	Socket, aerial - FM
				7210689	Socket, 8 pin
0201	3152799	Holder		3151321	Cable clip
	6276938	Socket, aerial - AM			
14modul	8001736	Master Link Interface, Audio			
15modul	8001834	Transformer			
	7219087	Mains socket			
17modul	8050111	Tuner			
	8050112	Tuner, type 2634, 2639			
	3302396	Lid			
18modul	8001817	Headphone			
	7210510	Socket			
28modul	3358279	Light supply			
29modul	8001781	Radio Data System			
	3120269	Holder			

9101	3151277	Holder	9122	2815032	Leaf spring
9102	2722055	Belt pulley	9123	7400322	Switch 1 pin
9103	2938237	Bushing	9124	3035062	Slide shoe
9104	2930074	Spacer	9125	2819254	Spring
9105	3031314	Fitting	9126	2831070	Shaft
9106	3015167	Guide	9127	2700092	Gear wheel
9107	3114369	Chassis	9128	2390001	Lock washer
9108	3252732	Holder	9129	2732076	Belt
9109	3152735	Holder	9130	2722054	Belt pulley
9110	2642030	Clamp	9131	2905128	Bearing
9113	3151276	Holder	9132	2700094	Gear wheel
9114	2938237	Bushing	9133	2930108	Bushing
9115	2732092	Belt	9134	2854153	Arm
9116	2831071	Shaft	9135	2819255	Spring
9117	2722053	Belt pulley	9136	3151291	Holder
9118	2390001	Lock washer	9137	3010033	Stop for transport screw
9119	2700093	Gear wheel			
9120	2724087	Cord pulley	9138	3152747	Holder
9121	2815029	Ground spring	3139	3103303	Foot

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LIST OF MECHANICAL PARTS

3140	2311029	Clip	9156	3152727	Holder
9141	2560279	Rail	9157	3035060	Slide shoe
9142	2722055	Pulley	9158	3358275	Heat sink
9143	2548254	Bracket	9159	3030116	Hinge
9144	2391086	Locking piece	9160	3030117	hinge
9145	2391087	Locking piece	9161	3152730	Holder
9146	3152727	Holder	9162	3358274	Heat sink
9147	3358276	Heat sink	9164	3124121	Mounting plate
9148	3955042	Cord	9165	2548247	Bracket
9149	2810133	Tension spring	9166	3013083	Guide rail
9150	2810155	Spring	9167	3013084	Guide rail
9151	2930074	Bushing	9168	2548245	Bracket
9152	7400322	Switch 1 pin	9169	3152757	Holder
9153	2311030	Clip	9171	3430605	Rear cover
9154	2391086	Locking piece	9173	3300120	Screen
9155	2391087	Locking piece			

91M1	8400190	Motor	91M2	8400189	Motor

Survey of screws and washers

1	2013118	Screw 3.0x8	13	2389065	Nut
2	2036036	Screw 2.5x4	14	2036066	Screw 2.5x2.5
3	2039033	Screw 3x6	15	2011050	Screw 3x8
4	7530119	Solder tag	16	2364060	Rivet
5	2622052	Washer 3.2x8.x1	17	2724078	Cord pulley
6	2039069	Screw 3x8	18	2039062	Screw 3x5
8	2038127	Screw transport protection	19	2038116	Screw 3x20
			20	2038130	Screw 3x25
9	2039006	Screw 3x5	21	2038129	Screw 3x10
10	2622247	Washer 3.2x10.2x1	22	2039034	Screw 3x12
11	2036016	Screw 2.6x6	23	2013138	Screw 2.9x6.5
12	2834109	Shaft			

Survey of wire bundles

6276291 Tape PCB
6276938 AM socket
7210851 FM socket
6276386 Tape head
6276402 Transmission diode
6276955 Reception diode
6276517 Switch (motor), CD motor, Micro switch, Motor for lid

6276940 Main wire bundle

3P26	-	5P42	12P15	-	8P65
3P27	-	9P77	12P16	-	7P56
3P32	-	6P46	12P17	-	5P41
3P30	-	8P68	12P18	-	6P49
3P29	-	7P54	12P19	-	7P53
9P80	-	5P46	12P22	-	7P55
9P76	-	6P133	12P25	-	18P26
12P11	-	8P67	12P108	-	13P130
12P12	-	8P66	15P24	-	6P132

6276941 Wire bundle for back cover

12P13	-	1P5	12P23	-	3P33
12P14	-	1P3	12P103	-	1P6
12P20	-	3P28	12P104	-	3P31
12P21	-	1P7			

6276942 12P107 - 13P131

6277007 12P100 - 15P120
12P105 - 15P121

6277008 1P4 - 29P71
1P8 - 29P73
1P10 - 29P72

4 - 5
LIST OF MECHANICAL PARTS

4 - 5
LIST OF MECHANICAL PARTS

Parts not shown

3392405	Outer carton
3397824	Foam packing
3946038	Foil
3164900	Cable cover
6100248	Mains cable, type 2635, 2640
6100247	Mains cable, type 2634, 2639
6100246	Mains cable, type 2633, 2638
6100273	Mains cable, type 2631, 2632, 2636, 2637
1205111	Stand
1205266	Wall bracket

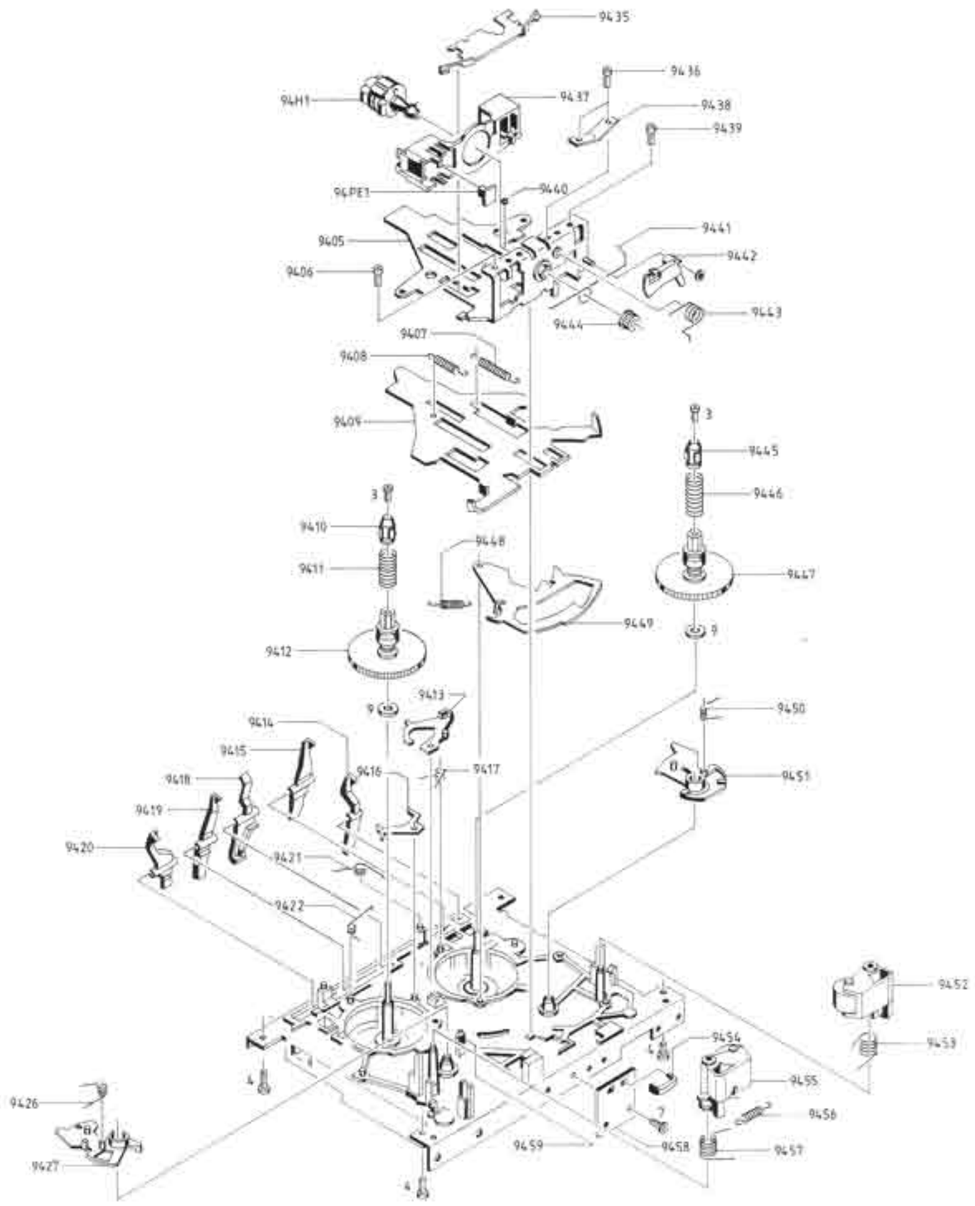
Owners manual

3501585	Danish
3501586	Swedish
3501587	English
3501588	German
3501589	Dutch
3501590	French
3501591	Italien
3501592	Spanish
3501609	Finnish

Setting-up guide

3502932	Danish
3502933	Swedish
3502934	English
3502935	German
3502936	Dutch
3502937	French
3502938	Italien
3502939	Spanish
3502940	Finnish

4 - 6
LIST OF MECHANICAL PARTS
4 - 6



Tape deck

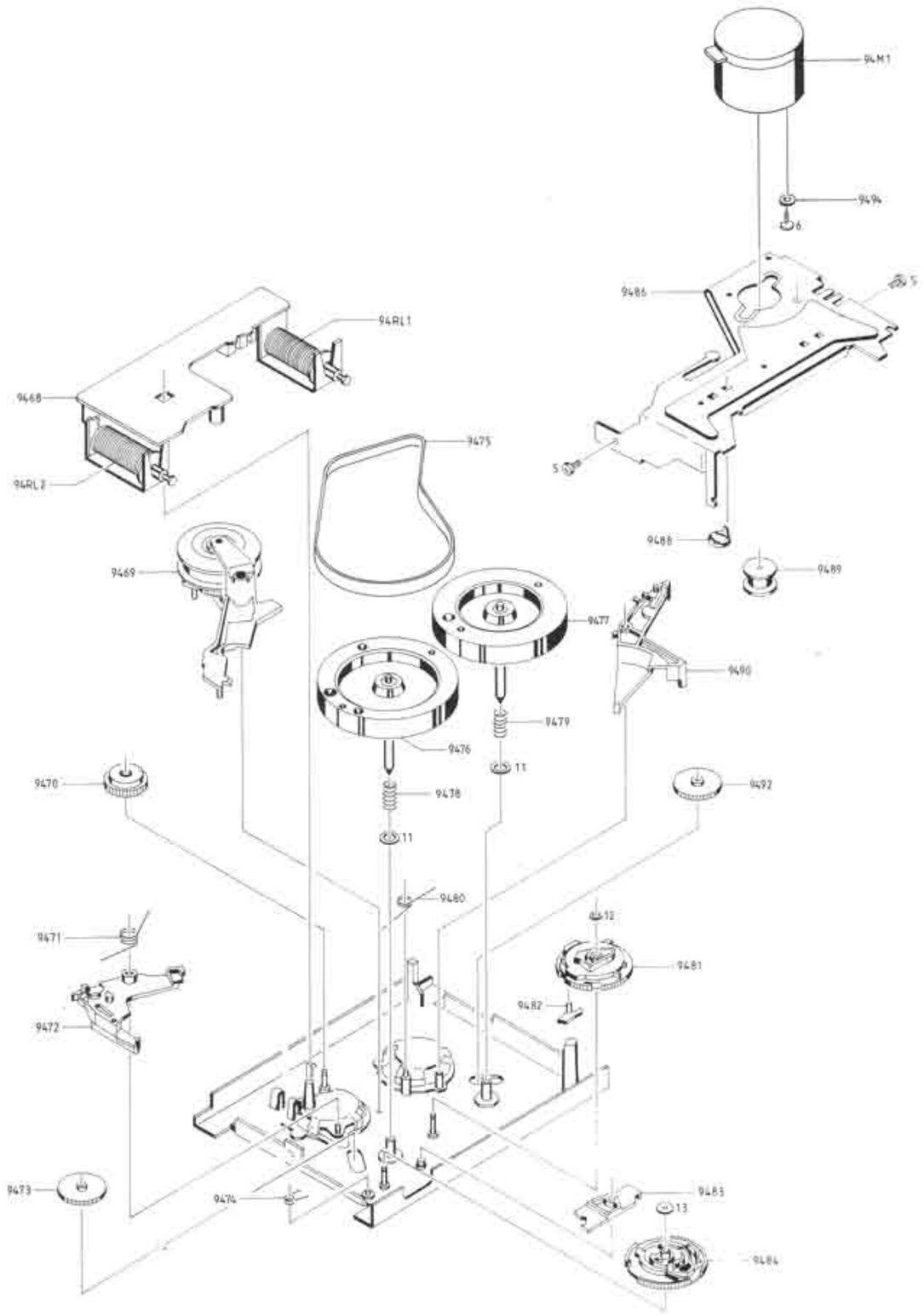
94modul	8422070	Tape deck
9405	3112372	Slide, tape head assembly
9406	2037001	Screw, height adj.
9407	2810257	Spring, tape head assembly
9408	2810255	Spring, slide plate
9409	3014089	Slide plate
9410	3164872	Cap, turntable
9411	2812135	Spring, turntable
9412	2726165	Turntable
9413	2851224	Arm, brake F.
9414	2851223	Arm, record 2 sensor
9415	2851222	Arm, Cr sensor
9416	2851218	Arm, brake R.
9417	2818101	Spring, brake F
9418	2851221	Arm, cassette sensor
9419	2851220	Arm, metal sensor
9420	2851219	Arm, record 1 sensor
9421	2818100	Spring f. switch
9422	2818099	Spring, brake R
9426	2818098	Spring, arm play R
9427	2851217	Arm, play R.
9428	3112371	Chassis
9435	2816261	Spring, tape head assembly
9436	2037002	Screw, azimuth adj.
9437	3131364	Housing, tape head assembly
9438	2816262	Spring, azimuth adj.
9439	2037001	Screw, height adj.
9440	2917027	Ball
9441	2818102	Locking spring
9442	2851225	Gear arm
9443	2818103	Spring f. gear arm
9444	2700099	Gear, tape head
9445	3164873	Cap, turntable
9446	2812136	Spring, turntable
9447	2726165	Turntable
9448	2810258	Spring f. arm, tape direction
9449	2851226	Arm, tape direction
9450	2818104	Spring, arm F.
9451	2851227	Arm, play F.
9452	2794146	Thrust roller F.
9453	2818105	Spring, thrust roller F.
9454	2311037	Wire holder
9455	2794149	Thrust roller R.
9456	2810257	Spring, thrust roller R.
9457	2818106	Spring, thrust roller R.
9458	6141575	PCB f. tape head
9459	3634041	Mirror f. PE1

94H1	8600115	Tape head w. wires
	6276498	Set of wires from tape head to tape head PCB
	6276435	Wire with P4 for tape head

94PE1	8004902	Opto Coupler

4 - 7
LIST OF MECHANICAL PARTS

4 - 7
LIST OF MECHANICAL PARTS



Tape deck

9468	8004901	PCB f. tape mechanism
9469	2851233	Cluth, fast foreward rewind
9470	2700104	Wheel, autostop
9471	2818108	Spring
9472	2851228	Arm
9473	2700100	Gear wheel
9474	2818107	Spring, cam wheel
9475	2732101	Belt
9476	2794147	Flywheel, right
9477	2794148	Flywheel, left
9478	2812137	Spring, flywheel
9479	2812137	Spring, flywheel
9480	2818109	Spring
9481	2700102	Cam wheel
9482	2851231	Arm
9483	2851232	Arm, pause
9484	2700103	Cam, wheel
9486	3112373	Chassis, flywheels
9488	2905131	Bearing, flywheels
9489	2722061	Pulley
9490	2851230	Arm
9492	2700100	Gear wheel
9494	2932133	Rubber bushing
	2932134	Rubber damper

94S1/4/5	7400411	Switch
94S2/3	7400412	Switch

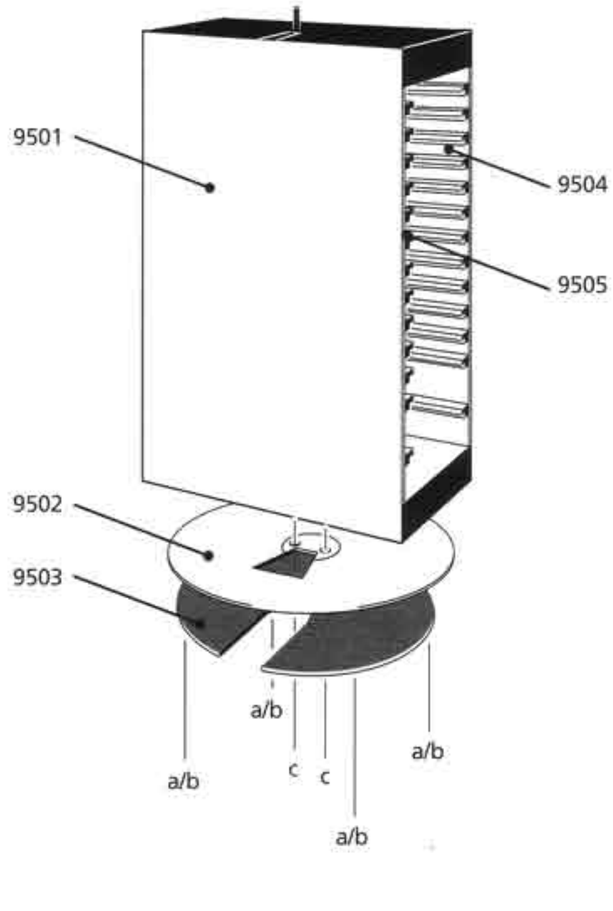
94RL1	8020898	Solenoid, play
94RL2	8020899	Solenoid, «, »

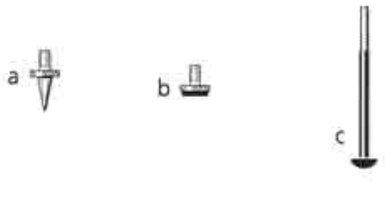
94M1	8400188	Motor

Survey of screws and washers

3	2036073	Screw 2.1x4
4	2013144	Screw 3x8
5	2036074	Screw 2.6x4
6	2036076	Screw f. motor
7	2036072	Screw 2x4
9	2390113	Washer
10	2390111	Washer
11	2390112	Washer
12	2390109	Washer
13	2390110	Washer

ST2500, TYPE 2051





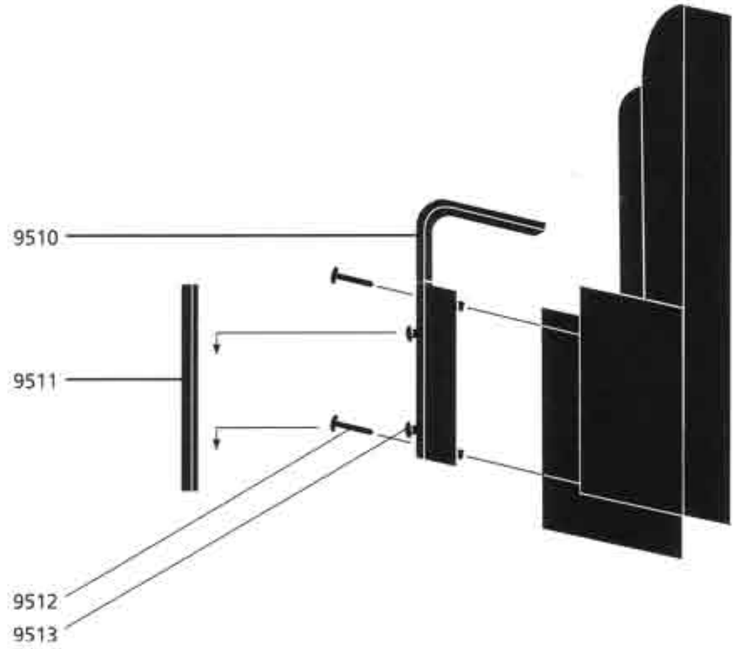
9501	3451418	Cover plate
9502	3458890	Cover plate, bottom
9503	2752043	Bottom
9504	3013094	Guide rail, right
9505	3013094	Guide rail, left
a	3103313	Foot, spike
b	3103322	Foot, soft
c	2046040	Screw, 6x63

Parts not shown

	3502921	Setting-up guide
	3397953	Foam packing
	3392423	Outer carton

4 - 8
LIST OF MECHANICAL PARTS

WB2500, TYPE 2052

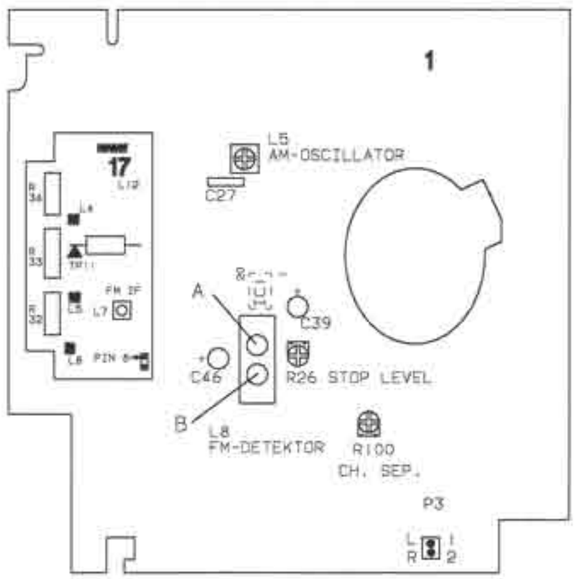


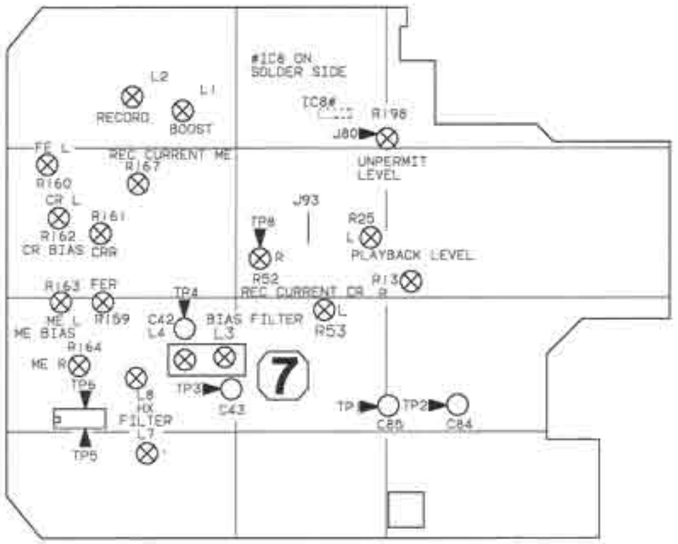
9510	2777052	Handle, right
	2777053	Handle, left
9511	1205266	Wall bracket
9512	2038130	Screw, 3x25
9513	2043016	Screw, 4x10
	2930126	Bush

Parts not shown

	3390432	Wire holder
	3502922	Setting-up guide

ADJUSTMENTS





5 - 1
ADJUSTMENTS

TEST MODE

Test mode is used in connection with adjustments, and test mode moreover gives access to a number of test functions, see page 5-16.
BeoSound Ouverture is brought into test mode in the following ways:
- Connect mains voltage
- Within 12 sec., press the following keys on the keyboard:

PROGRAM 2 6 3 0

Test mode is indicated by the display in the following way:

TESTMODE

Test mode is abandoned by disconnecting the mains voltage
or
By pressing •. Values selected in test mode are retained.

RF ADJUSTMENTS

Repair tips

It is important during servicing that the aerial plug is connected to module 1, since there would otherwise be no ground connection for the Master Link socket.

AM ADJUSTMENTS

Oscillator MW

No signal should be applied.
- Connect a DC voltmeter across 1C27.
- Tune the product to 150 kHz (520 kHz).
- Adjust 1L5 until the voltage across 1C27 is 2 V ±0.25V (4 V ±0.25 V).

FM ADJUSTMENTS

Replacement of FM tuner

- When the FM tuner is replaced, only the IF coil, 17L7, has to be adjusted.

IF

- Connect an oscilloscope to pin 8 of 1IC1 (1R26).
- Connect a sweep generator to the aerial input and tune to 87.5 MHz.
- Tune the product to 87.5 MHz
- Adjust 17L7 to maximum and symmetrical IF curve.

TUNER ADJUSTMENTS

(To be made only if the tuner is incorrectly adjusted).

Oscillator

No signal should be applied.
- Connect a DC voltmeter between 17TP11 and pin 8 of the tuner.
- Tune the product to 87.5 MHz and adjust 17L8 to 0V.

HF 87.5 MHz

- Connect an oscilloscope to pin 8 of 1IC1 (1R26).
- Connect a sweep generator to the aerial input and tune to 87.5 MHz.
- Tune the product to 87.5 MHz
- Adjust 17L2, 17L4, 17L5 and 17L7 to maximum and symmetrical IF curve.

HF 108 MHz

- Tune the product to 108 MHz.
- The sweep generator frequency is changed to 108 MHz, and 17R32, 17R33 and 17R34 are adjusted to maximum.

Detector

- 1L8 is adjusted only in connection with a replacement of 1IC1, 1BP4 and 1BP5.
- Connect an oscilloscope to pin 8 of 1IC1 (1R26).
- Connect a DC voltmeter between positive on 1C39 and positive on 1C46.
- Connect a signal testing generator to the aerial input and adjust to 98 MHz, 50dBmV (300mV EMF), ±75 kHz, 1kHz modulation.
- Tune the radio to 98 MHz.
- Fine-tune the signal testing generator frequency to minimum distortion (2nd harmonic) in the signal, as illustrated on the curve.

CORRECT

INCORRECT

- Change the level at the aerial input to 72dBmV (4mV EMF).
- Adjust 1L8A to 0V ±50mV. Metal tools must not be used when adjusting 1L8.
- 1L8B can be adjusted accurately with a distortion meter connected to 9R70 (right channel).
- Screw 1L8B up such that the core is flush with the top of the box (top position).
- Adjust 1L8B downwards until the minimum harmonic distortion is present at the AF output for the first time.
- Fine-adjust 1L8A and 1L8B.
- 1L8B is typically adjusted two turns down from the top position.

FM display adjustment

- After a repair/adjustment in the FM detector circuit or after replacement of PCB1, PCB3, 3IC6, 3B1, 3D4, 3R38 or 1BP4, the indication of the received frequency has to be adjusted, even if the display shows the correct frequency.

Offset adjustment, FM

The product must have been switched on for at least 2 minutes before the adjustment is made.

- Tune in to a known station with a known frequency by pressing RADIO TUNE PLAY ▲.
  The display will not necessarily show the correct frequency.
- Press PLAY PLAY PLAY to store the programme (the display writes STORED).
- Press 0 3 (resets the offset value). The display reads: OK 3
- Press 0 6 + correct frequency, four digits, e.g. 98.5 MHz = 0985
- The display should now write OK 6.

Display adjustment cannot be made on AM.

Channel separation

- Connect a stereo encoder to the aerial input and adjust to 88 MHz 60dBmV, (1mV EMF), 1kHz modulation in the one channel and an unmodulated signal in the other channel.
- Connect an AF voltmeter to the unmodulated channel 1P3-2 (right) or 1P3-1 (left).
- Tune the product to 88 MHz.
- Adjust 1R100 to minimum signal in the unmodulated channel.
- Connect an AF voltmeter to the other channel, and adjust in this case the stereo encoder to an unmodulated signal.
- Check whether or not the channel separation is symmetrical; if not, readjust 1R100 until this has been achieved.

FM stop level

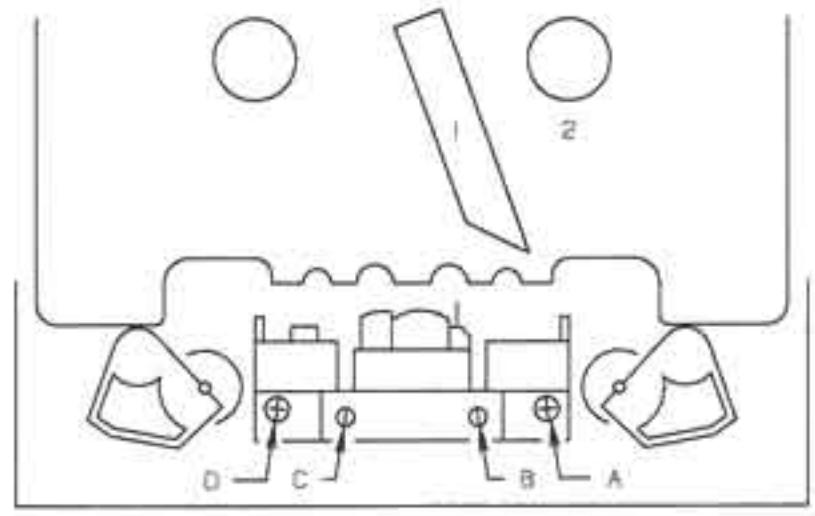
- Connect a signal testing generator to the aerial input and adjust to 88 MHz, 20dBmV (10mV EMF) ±75kHz.
- Connect a DC voltmeter to pin 16 of 1IC1.
- Short-circuit the base of 1TR6 to ground (see drawing of the location of SMD components).
- Turn 1R26 clockwise until it stops.
- Tune the product to 88 MHz.
- Turn 1R26 anticlockwise until pin 16 of 1IC1 switches from low to high.
- Remove the short-circuit from the base of 1TR6.

MECHANICAL ADJUSTMENTS, TAPE RECORDER

Height and azimuth

To obtain correct height adjustment, height adjustment tool part No. 3624026 must be used.

Approximate adjustment can be obtained using a mirror cassette.



Height, tape guide

- Load adjustment tools 1 and 2.
- Press TAPE.
  The tape transport mechanism is now able to run without a tape being loaded, and without going into autostop.
- Adjust A and D respectively in such a way that adjustment tool 1 can be pushed into the tape guides.
- The tape recorder can only be stopped by pressing •.

Azimuth side 1

- Load azimuth tape part No. 6780036.
- Connect the two Y inputs on an oscilloscope to right and left AUX outputs.
- Press TAPE and adjust screw C until the 2 curves on the oscilloscope are in phase at maximum amplitude.

Azimuth side 2

- Press TURN.
- Adjustment as for side 1 but using screw B.

ELECTRICAL ADJUSTMENTS, TAPE RECORDER

Right/left

The specifications apply to the right channel, and those in brackets apply to the left channel.

Noise reduction

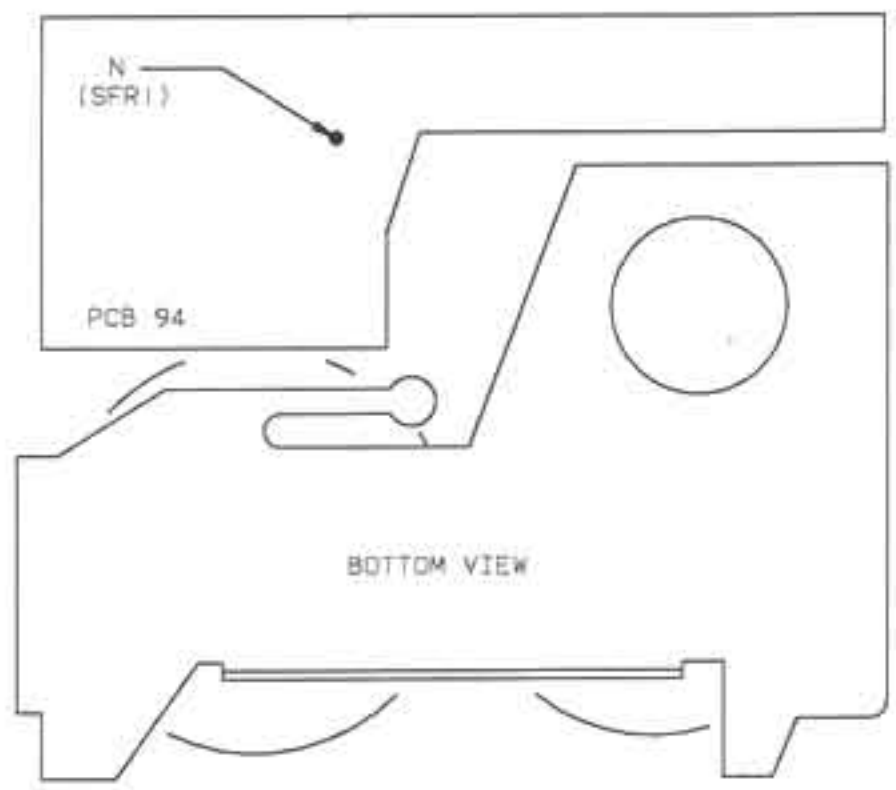
Make the electrical adjustments without Noise Reduction.
(Test mode 2 2).
Display reads OFF

Standard tapes to be used for adjustments:

CrO_2 TDK AP512	part No. 6780066
Fe_2O_3 BASF R723 DG	part No. 6780067
METAL AP 712	part No. 6780101

Speed

- Load the wow tape, part No. 6780037. (The adjustment must be made at the centre of the tape).



- Connect a wow meter with a drift meter to the AUX socket.
- Press TAPE, to play-back side 1.
- Press TURN, to play-back side 2.

The adjustment is made with SFR1 which is accessible through the hole in the PCB on the tape transport mechanism.

The adjustment is made so that the speed deviation when playing back side 1 and 2 respectively is symmetrical around 0%.

Playback level

The adjustment of the playback level, using two alternative types of standard tape, will be described below:

1. DIN standard 250 n Wb/m
2. ANSI standard 200 n Wb/m

1. Load standard level tape part No. 6780035
   Connect an AF voltmeter to 7TP2 (7TP1).
   Adjust 7R13 (7R25) until 660 mV is measured in 7TP2 (7TP1).

2. Load TEAC level calibration tape MTT-150A.
   Connect an AF voltmeter to 7TP2 (7TP1).
   Adjust 7R13 (7R25) until 580 mV is measured in 7TP2 (7TP1).

Test mode adjustment

It applies to all electrical adjustments that the product must be in test mode, see page 5-1, and in addition the automatic record level must be put out of operation, and the Noise Reduction function must be disengaged:

- Press 2 0 (automatic record level off). The display will read OK 20.
- Press 2 2 (Noise Reduction off). The display will read OFF.
- Press AUX.
- Connect an audio oscillator to the AUX input.

Noise Reduction on
Press 2 1, the display will read ON.

The product is now ready for adjustment.
- Upon completion of adjustment : press • to leave the test mode.

Recording boost

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Set the audio oscillator to 333 Hz and 400 mV.
- Load a Cr tape.
- Press RECORD RECORD.
- Connect an AF voltmeter to 7TP8 (7TP7).
- Regulate the audio oscillator output level until 1 V is measured.
- Reduce the audio oscillator output level by 20 dB, and change the frequency to 18 kHz.
- Adjust 7L1 (7L2) until 760 mV is measured.

HX filter

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Connect a DC voltmeter to 7TP6 (7TP5).
- Load a Cr tape.
- Press RECORD RECORD.
- Adjust 7L8 (7L7) to minimum DC voltage.

Bias filter

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Connect an AC voltmeter to 7TP4 (7TP3).
- Load a Cr tape.
- Press RECORD RECORD.
- Adjust 7L4 (7L3) to minimum voltage.

Cr bias

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Load a CrO_2 standard tape, part No. 6780066.
- Press RECORD RECORD.
- Set the audio oscillator to 333 Hz and 20 mV.
- Connect an AF voltmeter to 7TP2 (7TP1).
- Regulate the audio oscillator until approx. 30 mV is measured.
- Press PAUSE.
- Adjust 7R161 (7R162) until the playback levels at 333 Hz and 16 kHz are identical by first recording and then playing back 333 Hz and 16 kHz. (Less bias produces a treble boost. More bias produces a treble cut.)

Fe bias

The procedure is the same as for Cr bias, only a Fe_2O_3 standard tape, part No. 6780067, should be used, and 7R159 (7R160) should be adjusted instead.

MP bias

The procedure is the same as for Cr bias, only a metal standard tape, part No. 6780101, should be used, and 7R164 (7R163) should be adjusted instead.

Recording current, Cr

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Load a CrO_2 standard tape, part No. 6780066.
- Press RECORD RECORD.
- Set the audio oscillator to 333 Hz and 100 mV.
- Connect an AF voltmeter to 7TP2 (7TP1).
- Adjust the audio oscillator until approx. 200 mV is measured.
- Press PAUSE.
- Adjust 7R52 (7R53) until the record level is 200 mV by first recording and then playing back 333 Hz.

Recording current, MP

- The Cr adjustment must have been made.
- The procedure is the same as for recording current, Cr, only use the metal standard tape , part No. 6780101.
- The adjustment applies to both channels, and it is made by means of 7R167.

Automatic record level

Make this adjustment in test mode (do as described under 'test mode adjustment').
- Load a Cr tape.
- Press RECORD RECORD.
- Set the audio oscillator to 333 Hz and approx. 400 mV.
- Connect an AF voltmeter to 7TP2.
- Adjust the audio oscillator until 660 mV is measured.
- Connect a DC voltmeter to 7IC8, pin 9 (jumper J93) and pin 10 (jumper J80/7R198).
- Adjust 7R198 until 0 mV ±10mV is measured.

ELECTRICAL ADJUSTMENT

CD

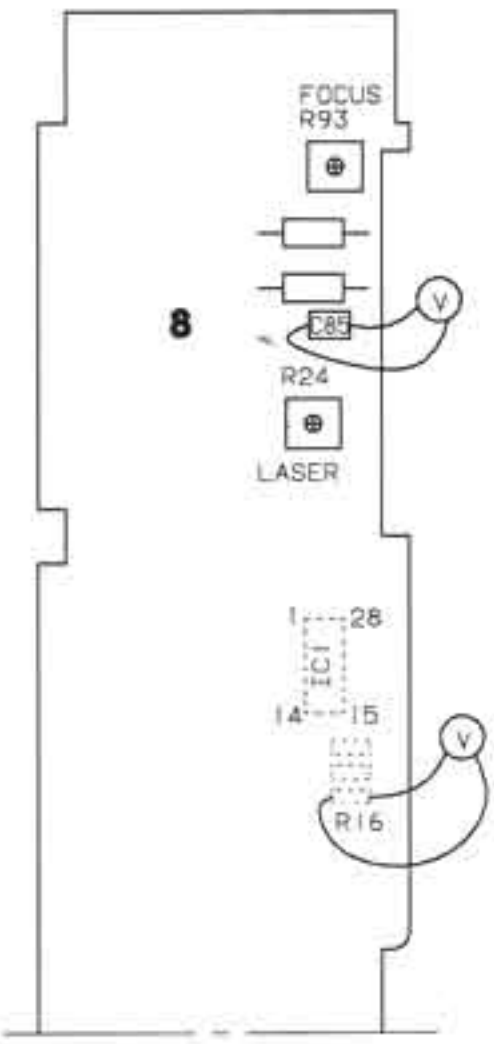
THE PHOTODIODES AND THE LASER ARE MORE SENSITIVE TO STATIC ELECTRICITY THAN MOS IC'S. CARELESS TREATMENT DURING SERVICE CAN REDUCE THEIR LIFE DRAMATICALLY. MAKE SURE, THEREFORE, THAT THE JOB STATION IS PROTECTED AGAINST STATIC ELECTRICITY.

The product must not be connected to the mains when the CD drive mechanism is replaced or if the drive mechanism and PCB 8 are not interconnected.

Laser current

Important:
Preadjust the laser current potentiometer 8R24 after a replacement of the CD drive mechanism.

Also, check the connection to the monitor diode before the product is connected to the mains.



Connect an ohmmeter from pin 18 to pin 27 of 8IC1.

Adjust 8R24 until 1 kohm +/- 10% is measured.

Connect a DC voltmeter across 8R16.

Load test disc no. 5 (disc without errors, part no. 3634031).

Connect the product to the mains, and press CD.

The voltage across 8R16 should be higher than 15 mV. If it is not, switch off the product and find the error.

If the voltage is higher than 15 mV, play track 1 on test disc 5 and adjust 8R24 until 50 mV +/- 5 mV is measured with the DC voltmeter.

NOTE: If the voltage across 8R16 is lower than 25 mV, the CD may stop shortly after starting. Consequently, this adjustment has to be made immediately after starting the CD.

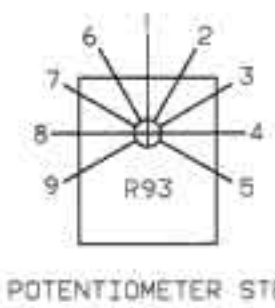
Focus offset

Load test disc no. 5 (part no. 3634031).

Connect a DC voltmeter across 8C85.

Press CD.

If the CD does not start, turn the potentiometer 8R93 in steps until it starts.



POTENTIOMETER STEP

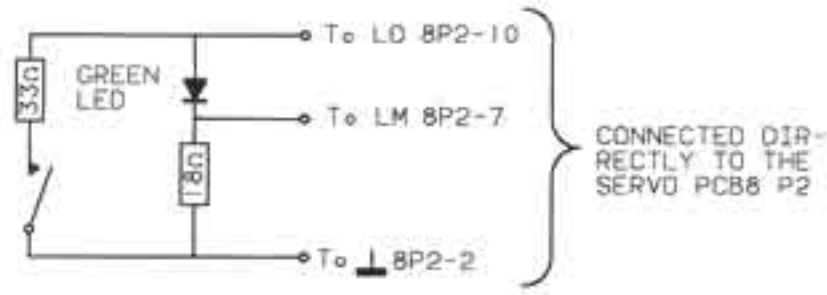
When the CD is able to start, adjust 8R93 until 400 mV +/- 40 mV is measured.

Checking the laser supply

The laser, the laser supply in 8IC1 and the monitor diode form a feedback system. An error in the laser supply can result in the destruction of the laser.

Since it is impossible to check and repair a feedback system in which one of the components is missing, the circuit below can be used for checking the laser supply.

The green LED constitutes the laser, e.g. CQY94, part no. 8330054. The voltage across the 18 ohm resistor constitutes the monitor feedback voltage. The 33 ohm resistor and the switch allow the current consumption from the laser supply to be changed.



Remove the flex-PCB from P2 on the servo PCB.

Solder the above circuit onto P2 on the servo PCB.

Short-circuit SI (pin 6 of 8IC1) to ground.

When SI (start initialization) is low, the laser supply can be switched on in service position 1 by bringing the product into test mode, see page 5-1, and then pressing CD 1.

Measure the LO voltage at pin 10 of 8P2.

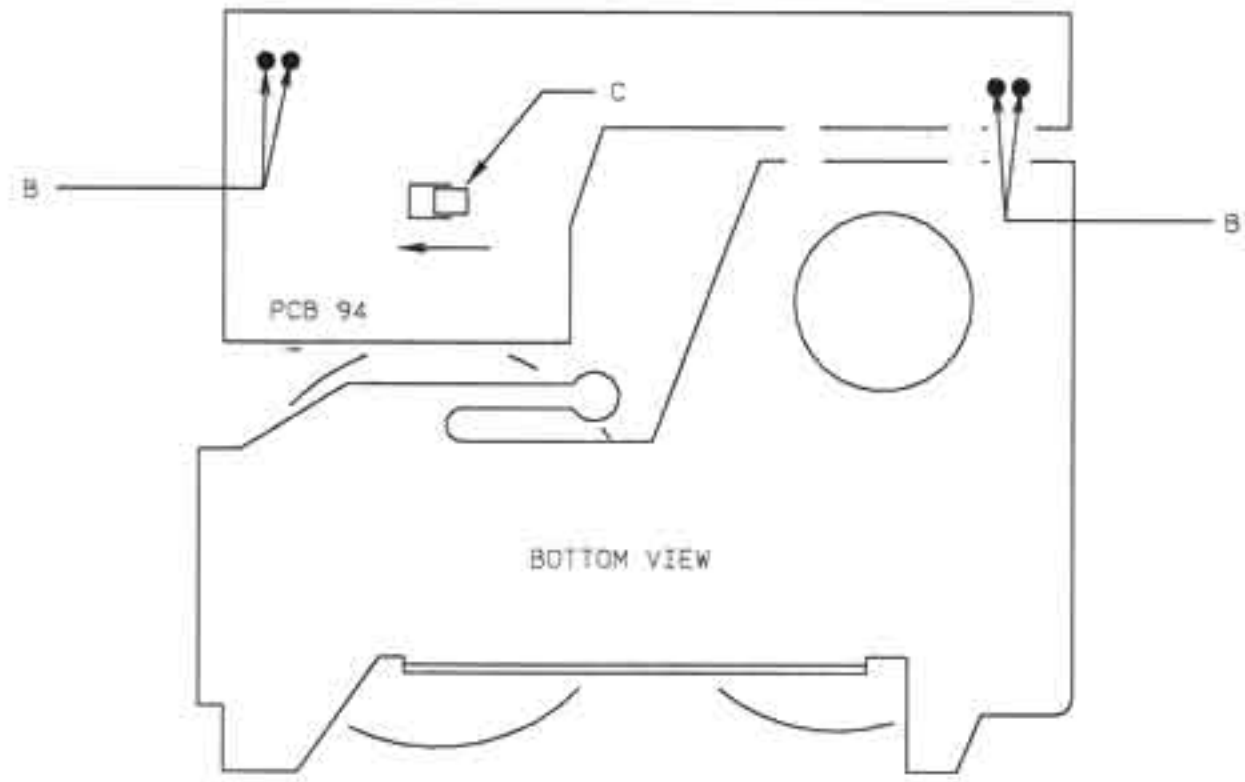
S1 disconnected:
LO from 1.8 V to 2.3V
LM from 170mV to 220mV
The green LED shines faintly.

S1 short-circuited:
LO from 1.8 V to 2.3V
LM from 170mV to 220mV
The green LED shines faintly.

When S1 is switched from short-circuited to disconnected condition, the LED will shine more brightly for a short moment. The feedback system has the effect that the same current is flowing through the LED no matter if S1 is short-circuited or disconnected.

REPAIR TIPS

Dismantling of PCB under tape transport mechanism



- Desolder the solder points B.
- Push the looking pin C in the direction of the arrow and pull out the PCB.

Lubrication chart

The need for relubrication is negligible.
In the case of overhauls and when replacing mechanical parts the directions below should be followed.

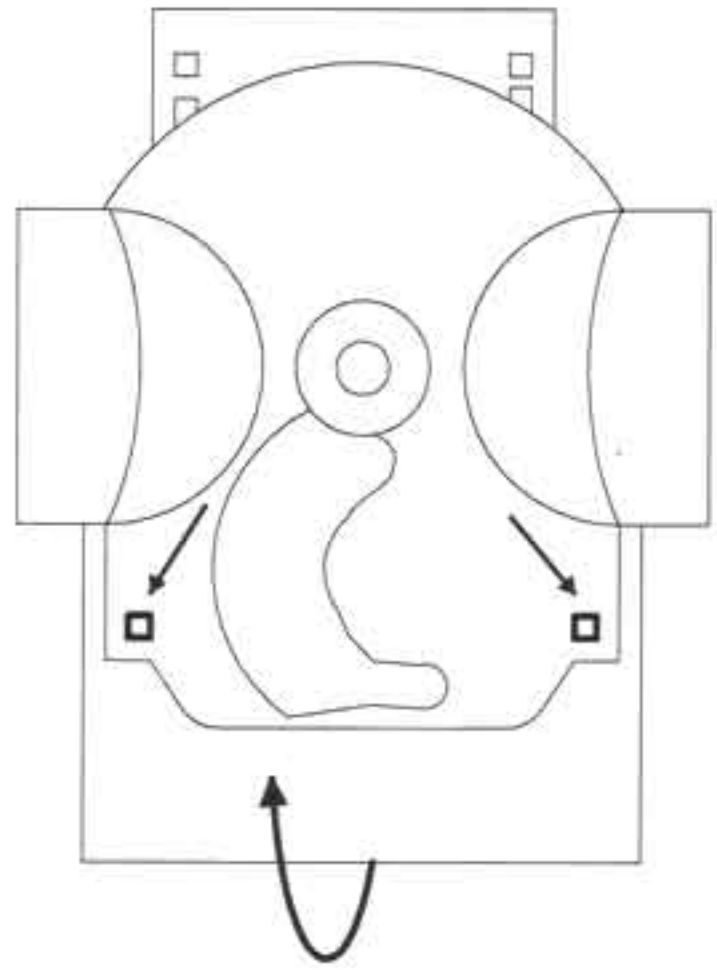
NB!
The lubricant should only be applied in small quantities.

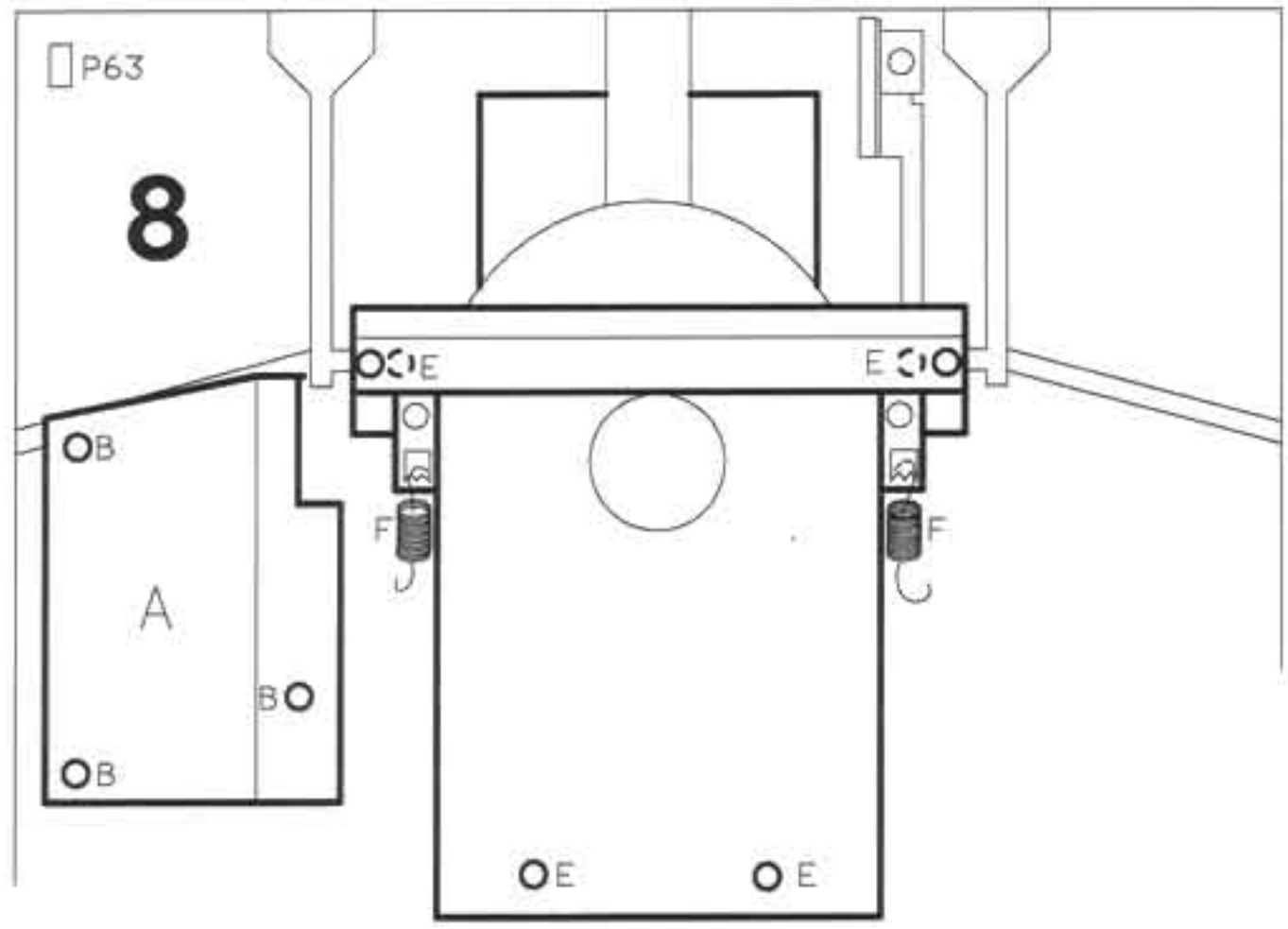
Capstan bearings Shafts for turntables 9412 and 9447 Bearing for pulleys 9487 Shaft on tapehead 94H1	3984022 Floil GB TS-1
Sliding surfaces between other movable parts	3984030 Barrierta L5512 (25gr.)

Replacement of CD transport mechanism

Remove the rear panel.
Bring the power-supply unit and AF (PCB 12 and 15) into service position.
Dismount PCB7.
Dismount the cooling plate A by means of the screw B (the CD transport screw must be loosened).
Dismount flex print and 8P63.
Remove the screws E and take out the CD transport mechanism.
Remove the plastic fitting on the CD transport mechanism.

The adjustments for elevation and lateral centering are made by means of the springs F.
Make the elevation adjustment by bending the spring fitting outwards/ inwards.
Make the lateral centring by moving the springs F to the side of the spring fitting.

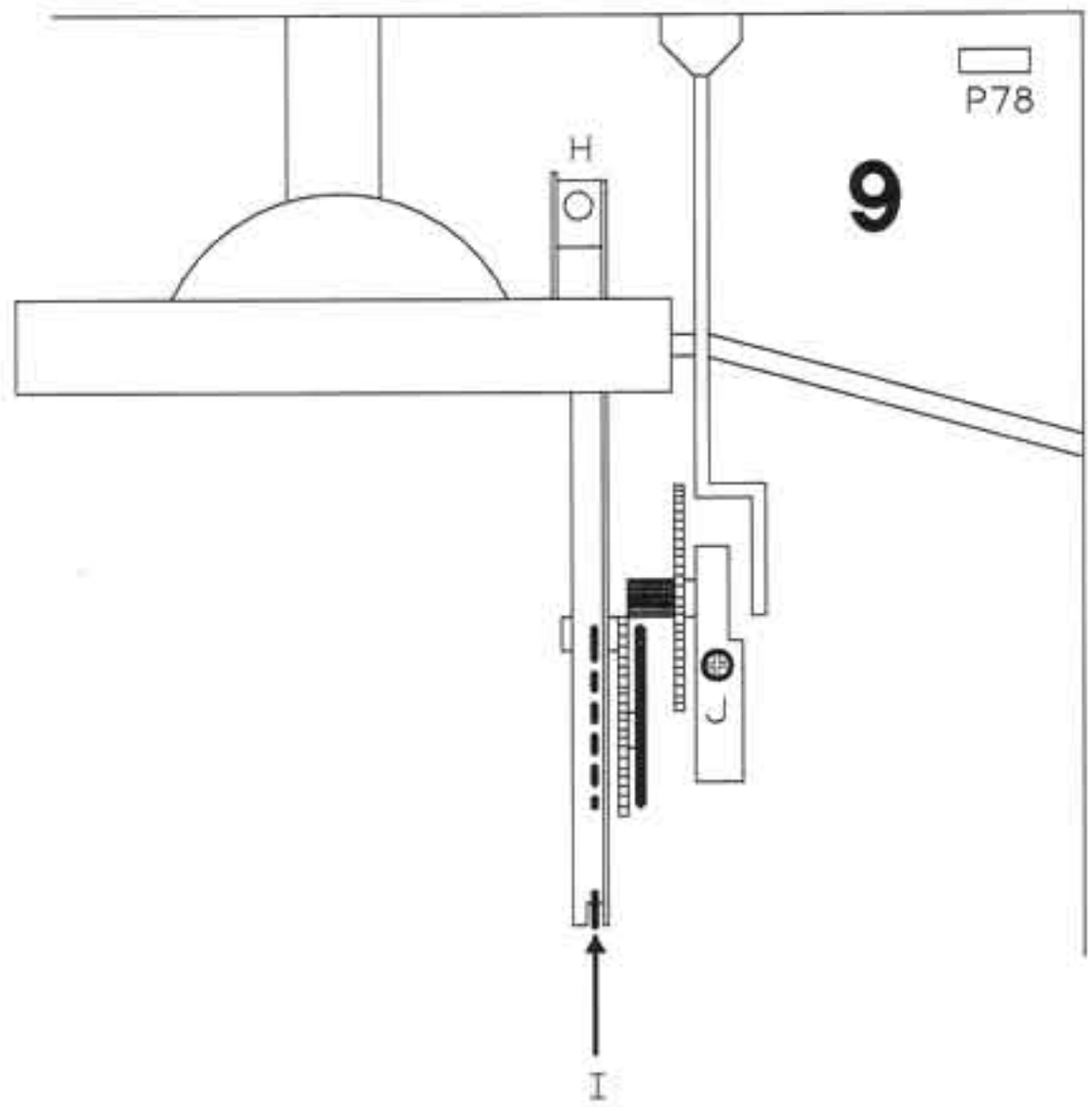




Removal of gearbox for CD clamp

Tape recorder PCB7 must be removed.
The clamp must be electrically sealed.
Lift up the clamp manually.
Dismount the spring I in its bottommost point.
Dismount the arm H.
Dismount the lead to the motor, plug 9P78.
Loosen the screw J and take out the gearbox.

Make sure that the two parts of the fitting at the top of the arm H are pressed together completely when reassembling; then tighten the fitting.

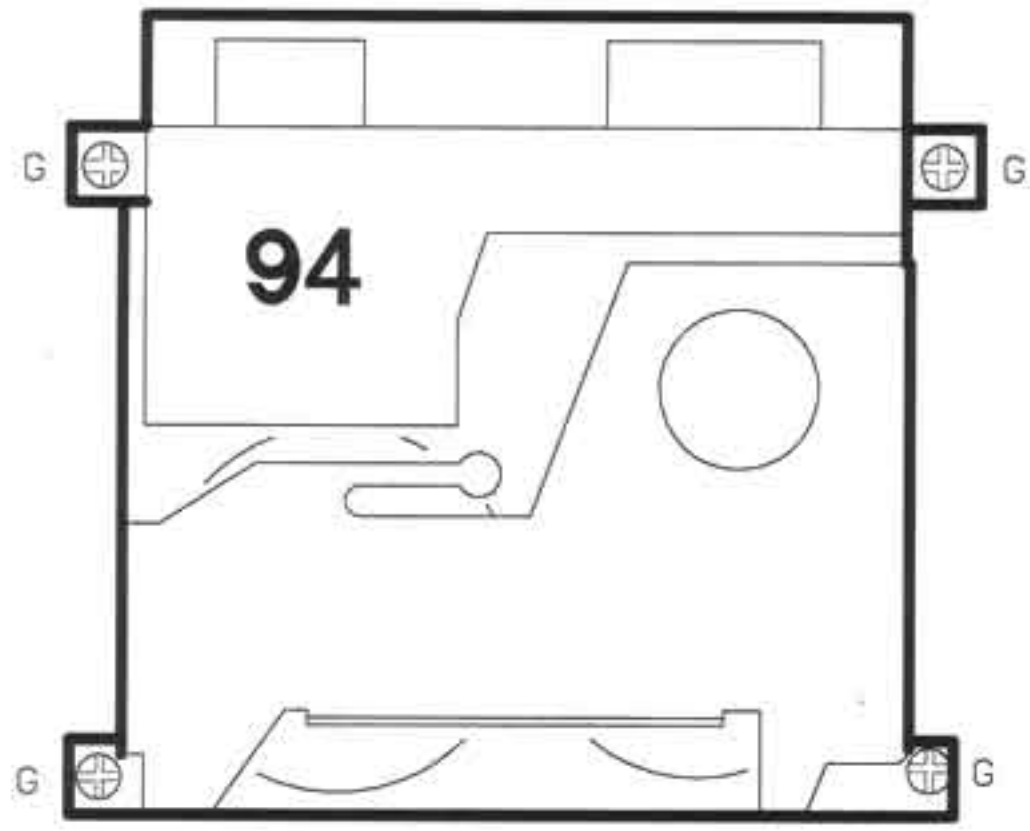


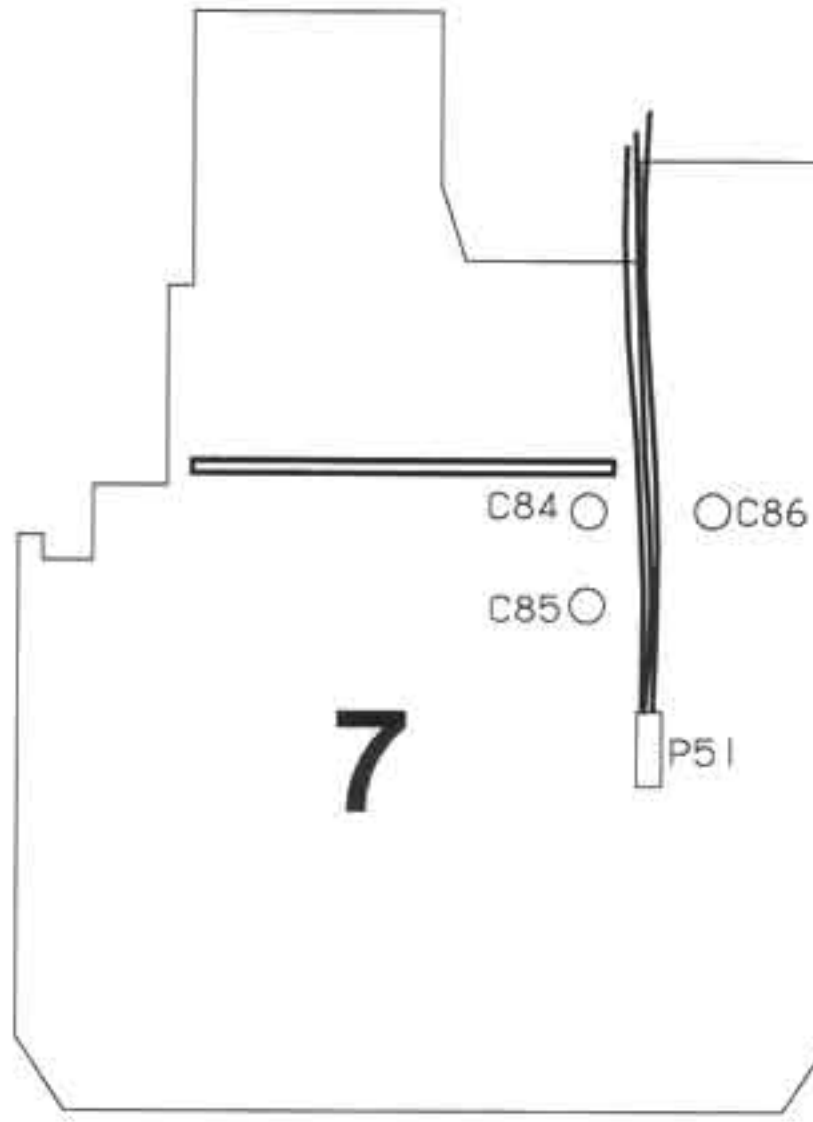
Removal of the tape recorder transport mechanism

Remove the rear panel.
Bring the power-supply unit and AF (PCB 12 and 15) into service position.
Dismount PCB7.
Remove the screws G and take out the transport mechanism.

When making electrical adjustments, the tape recorder PCB7 must be dismounted!

Make sure that the tape head leads are arranged properly when reassembling.





Wire system for glass doors.

Dismount the glass doors and cover plates.
Dismount the rear panel.
Bring the power-supply unit and AF module into service position.
Push the glass holders to the centre and loosen the wire clamping clips (one revolution).
Dismount the motor control circuit board, PCB9.

Dismounting rail A

Lift the right-hand side (as seen from the front) slightly outwards and push it towards the left.
Loosen the screws B in order to dismount the fitting with the wire pulleys.

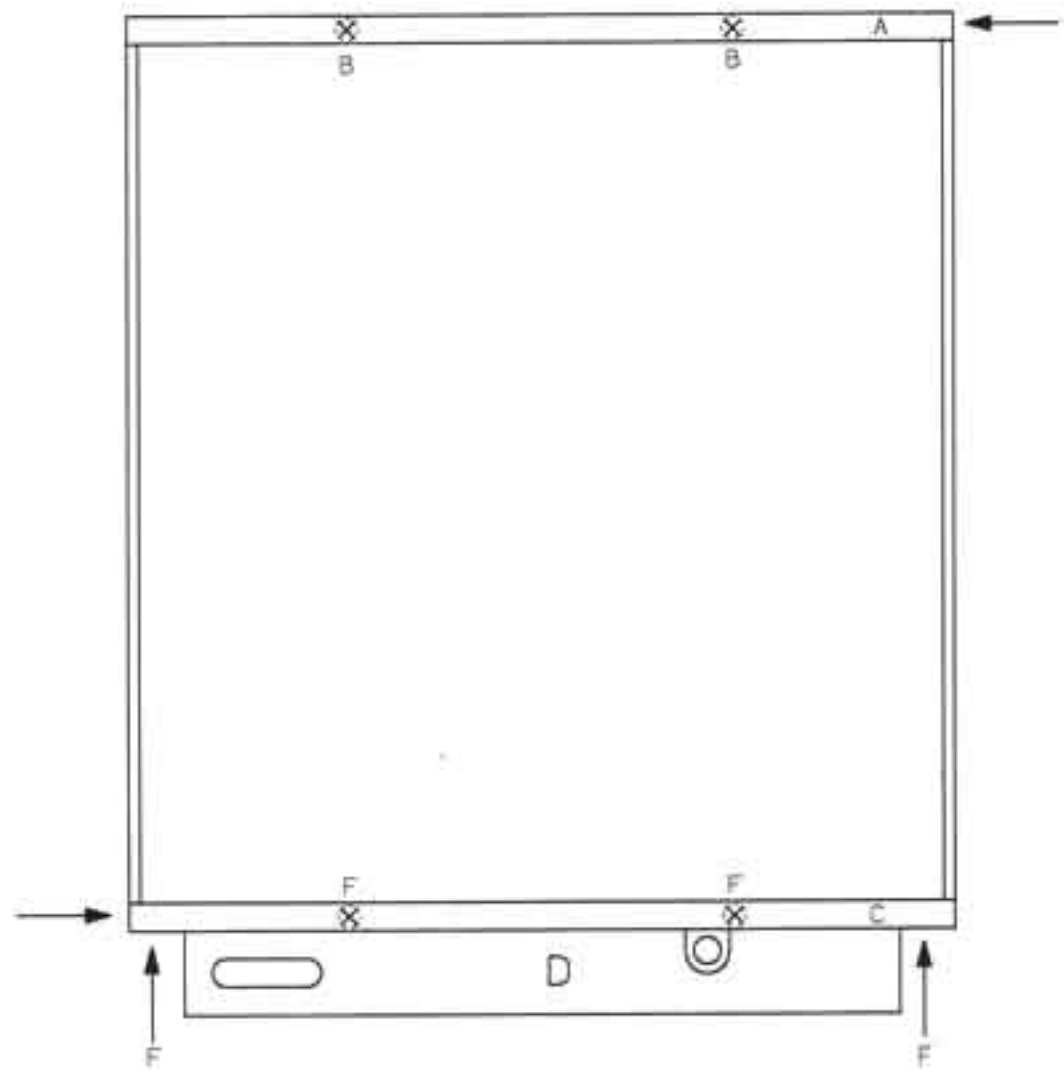
Make sure when mounting the new rail that the rail is positioned correctly in the pilot holes.

Dismounting rails D and C

Before dismounting the rail C, rail D and the front have to be dismounted.

Put out the rear edges of D in both sides and dismount the rail D. Loosen eight screws in the front to dismount it.
Lift out the left-hand side of the rail C, push it towards the right and dismount it.
Loosen the screws F.
Dismount the fitting with the wire pulleys.

Make sure when mounting the new rail that the rail is positioned in the pilot holes.



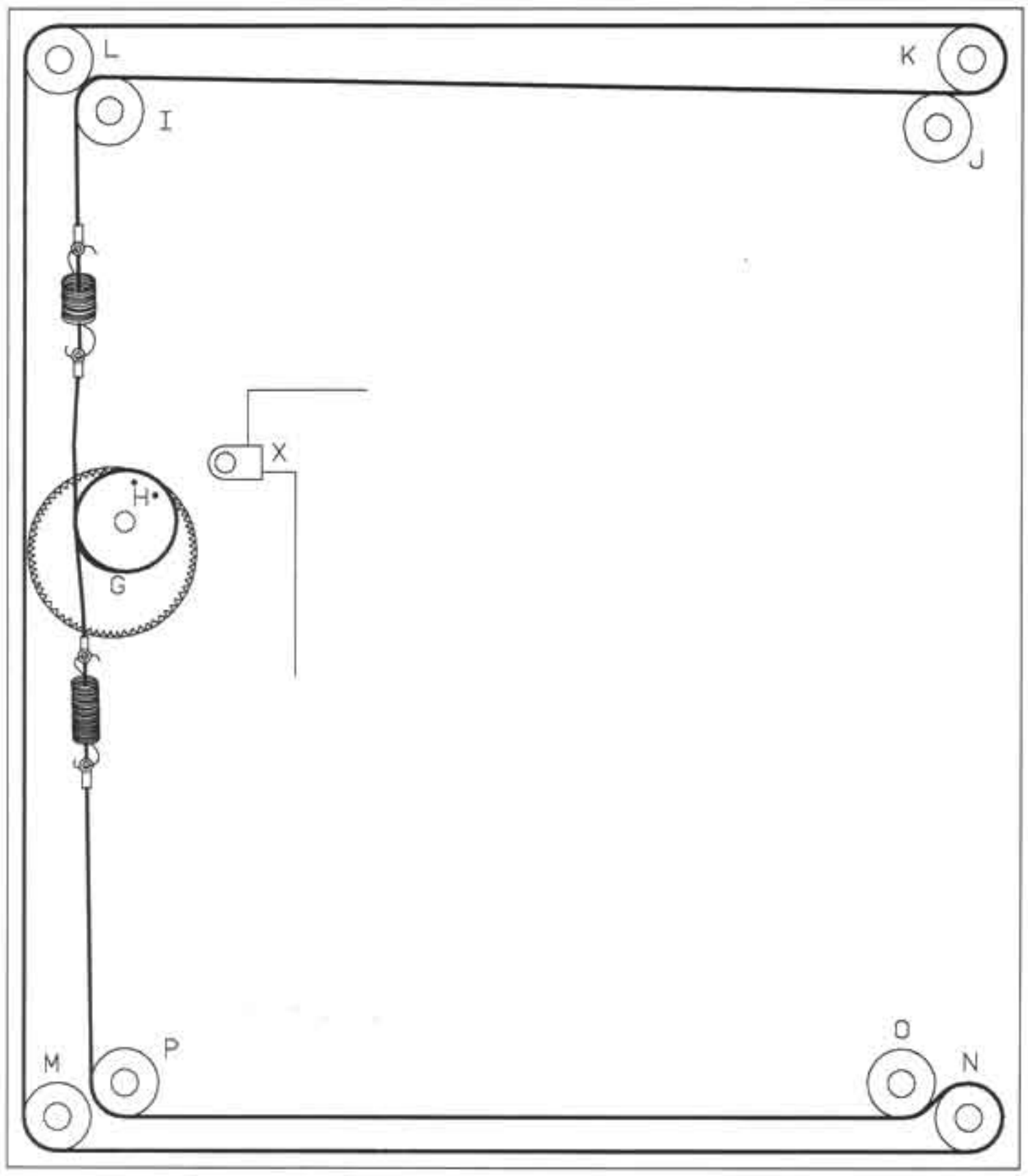
Mounting of wire for glass doors

Turn the wire pulley G clockwise until it stops.
Mount the wire in the wire pulley H (the end with the heavy spring).
Run the wire in the second innermost groove of the wire pulley H (underneath the pulley), up around the uppermost pulleys (I, J, K and L) and down around the lowermost pulleys (M, N and O).
Turn the pulley G anticlockwise.
Fasten the wire in the pulley H.
Mount the wire on pulley P and turn pulley G to check that everything is OK.

The slide rails may be lubricated with Barrierta grease L55-3 (part no. 3984030).

Readjustment of wire

Turn the pulley G such that the centre of the pulleys G and H is flush with the upper edge of the tower X.
Push the wire clamping clip towards the centre and tighten (but not too tight).



TEST FUNCTIONS

The BeoSound Ouverture has a number of built-in test functions. To gain access to these, the product has to be brought into test mode, see page 5-1.

The following options are available in test mode:

- display of tuner variant
- display of SW version (also possible without the product being in test mode)
- display test
- ROM/RAM test
- Open/close for data on AAL
- Open/close for signal on Master Link
- deletion of all preset programmes
- CD test

Display of tuner variant:

Press 0 4

Variant	Display
EU, RDS	2631
USA, RDS	2633
J, RDS	2634
AUS, RDS	2635
EU	2636
USA	2638
J	2639
AUS	2640

Display of SW version

Master Link microprocessor, 13IC2
Press 2 3 Display reads: SW: X.XX

Main Microprocessor, 3IC3
Press 2 5
Display reads: SW: X.XX

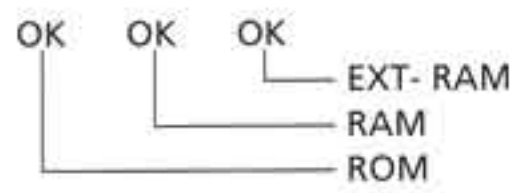
Display test

Press 3 0.

All dots must be on.

ROM/RAM test:

Press 1 0
If the RAM/ROM are OK, the display will read:



Error is indicated by - -

Open/close for data on AAL

Press 0 8
Closes for transmission of data on AAL
Display reads OK 8.

Press 0 9
Opens for transmission of data on AAL
Test mode must be abandoned before data can be transmitted.
Display reads OK 9.

Open/close for signal on Master Link

Press 2 8
Opens for signal to Master Link
Display reads OK 28.

Press 2 9
Opens for signal from Master Link and into the product.
Display reads OK 29.

Deletion of all preset programmes:

Press 0 7

All preset programmes have now been deleted.
The clock is set to 940101, 0 hours 0 minutes 0 seconds.
Option = 1
Volume =32
Balance, bass and treble in neutral.
Display reads OK 7.

Service program for the CD section:

Bring the product into test mode, see page 5-1.
Press CD

A disc need not to be inserted.

Press 1 The laser switches on and searches focus (focus is searched every time 1 is pressed).

- Does laser switch on?
- Does FE output regulate focus motor amplifier?
- Does focus motor regulate?

Press 2 The laser switches off.

Press 3 The CD motor starts running (runs anticlockwise), and the laser goes into the starting position.

Press 4 The CD motor stops.

Press 5 The laser arm moves towards its extreme outside position.

Press 6 The laser arm moves towards the centre.

Press •

Load a CD, e.g. no. 5 (disc without errors), part no. 3634031.
Bring the product into test mode, see page 5-1.

Press CD

Press PLAY The CD starts (lead in).

Press PAUSE The CD stops.

During playback, the following error messages may be displayed:

CD ERR 2 Focus error.

CD ERR 3 Radial error.

CD ERR 4 Motor error.

CD ERR 5 TL is low for 50 mS.

CD ERR 6 Step error.

CD ERR 7 Subcode error, no subcode within 3 seconds.

CD ERR 8 TOC error; outside the "lead in" area while the TOC (program content) is being read.

IR door sensors, PCB6.

Check the transmitter diodes OD2 and OD3 in the following way:

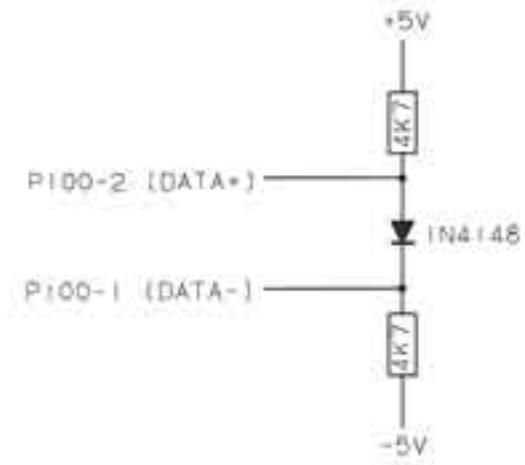
Connect in parallel an IR receiver diode and a 220 ohm resistor, and connect an oscilloscope.
Dismount 6P46.
Hold the IR receiver diode in front of each IR transmitter diode, and make sure there is some reflection behind the IR receiver diode e.g. from a piece of paper.

The oscilloscope should measure an oscillation of approx. 9 kHz if the system is "alive".

Master link DATA receiver/ transmitter

Test of the circuits 12TR30, 12TR31, 12TR52,12TR53 , 12TR55, 12TR56 and 12IC6

- lift P107
- mount on P4:



- connect a square-wave generator 10 kHz 0-5 V to P107-3 (transmit)
- measure P107-1 (receive) with an oscilloscope; it should produce the same signal as the one transmitted by P107-3, only here it is delayed by 10 - 15 uS.

To prevent that products connected via the Master Link socket destroy the data communication in the case of an error in the data interface, the data interface circuit has been designed in such a way that certain components can be defective without causing a malfunction.

For example, the diodes mounted in connection with Data- and Data+ are protection diodes which will protect against static electricity.

Consequently, when making a repair, it may be necessary to replace/check several components.

If 12TR55 is defective, both 12TR55 and 12TR56 should be replaced, and the diodes 12D4, 12D5, 12D19, 12D20, 12D21 and 12D22 should be checked.

If 12TR56 is defective, both 2TR56 and 2TR55 should be replaced, and the diodes 12D4, 12D5, 12D19, 12D20, 12D21 and 12D22 should be checked.

If one of the diodes 12D4, 12D5, 12D19, 12D20, 12D21 and 12D22 is defective, all of the diodes should be replaced, and 12TR55 and 12TR56 should be checked.

Wow frequencies:

Frequency	Error source	Pos. no.
1.4 Hz	Turntable (right)	9447
1.5 Hz	Turntable (left)	9412
1.5 Hz	Thrust rollers	9452/9455
3.9 Hz	Flat belt	9475
5.6 Hz	Flywheel (right)	9476
6.1 Hz	Flywheel (left)	9477
11.0 Hz	Clutch, fast forward/rewind	9469

Bang & Olufsen

Door sensors

BeoSound Ouverture

Type 2631, 2632, 2634, 2635, 2636, 2637, 2639, 2640

BeoSound 4000

Type 2633, 2638

Door sensors

3538860 06-96 Paste into Service Manual f. BeoSound Ouverture and BeoSound 4000 (3538837)

SERVICE MANUAL

LIST OF ELECTRICAL PARTS

Resistors not referred to are standard, see page 3-14
All other electrical parts are identical with chapter 3

PCB 6, 8001753
IR receiver and door sensor, left

R20	5011985	13.3kΩ 1% 1/8W
R67	5012067	29.4Ω 1% 1/8W
C19	4000420	470pF 5% 50V
P250	7220727	Plug 5 pole

PCB 16, 8001943
Door sensor, right

TR3	8320755 **051**	BC847B	TR26	8320755 **051**	BC847B
TR7	8320755 **051**	BC847B	TR32	8320755 **051**	BC847B
TR11	8320755 **051**	BC847B	TR36-TR37	8320755 **051**	BC847B
TR16	8320755 **051**	BC847B			
TR21	8320755 **051**	BC847B	TR47	8320811 **051**	BC857B

R38	5012067	29.4Ω 1% 1/8W			
R53	5021047	10Ω 5% 0.14W			
C2	4010316	100nF 10% 25V	C23-C24	4000420	470pF 5% 50V
C4	4010263	2.2nF 10% 50V	C27	4010271	10nF 10% 50V
C8-C9	4000420	470pF 5% 50V	C30	4010271	10nF 10% 50V
			C33	4200510	10µF 20% 16V
C13-C14	4000420	470pF 5% 50V	C49	4010195	2.7nF 5% 50V
			C52	4200688	47µF 20% 50V
C18-C19	4000420	470pF 5% 50V	C57	4010316	100nF 10% 25V

P1	7220725	Plug 3 pole
P2	7220728	Plug 6 pole
P3	7220727	Plug 5 pole

LIST OF MECHANICAL PARTS
FRONT

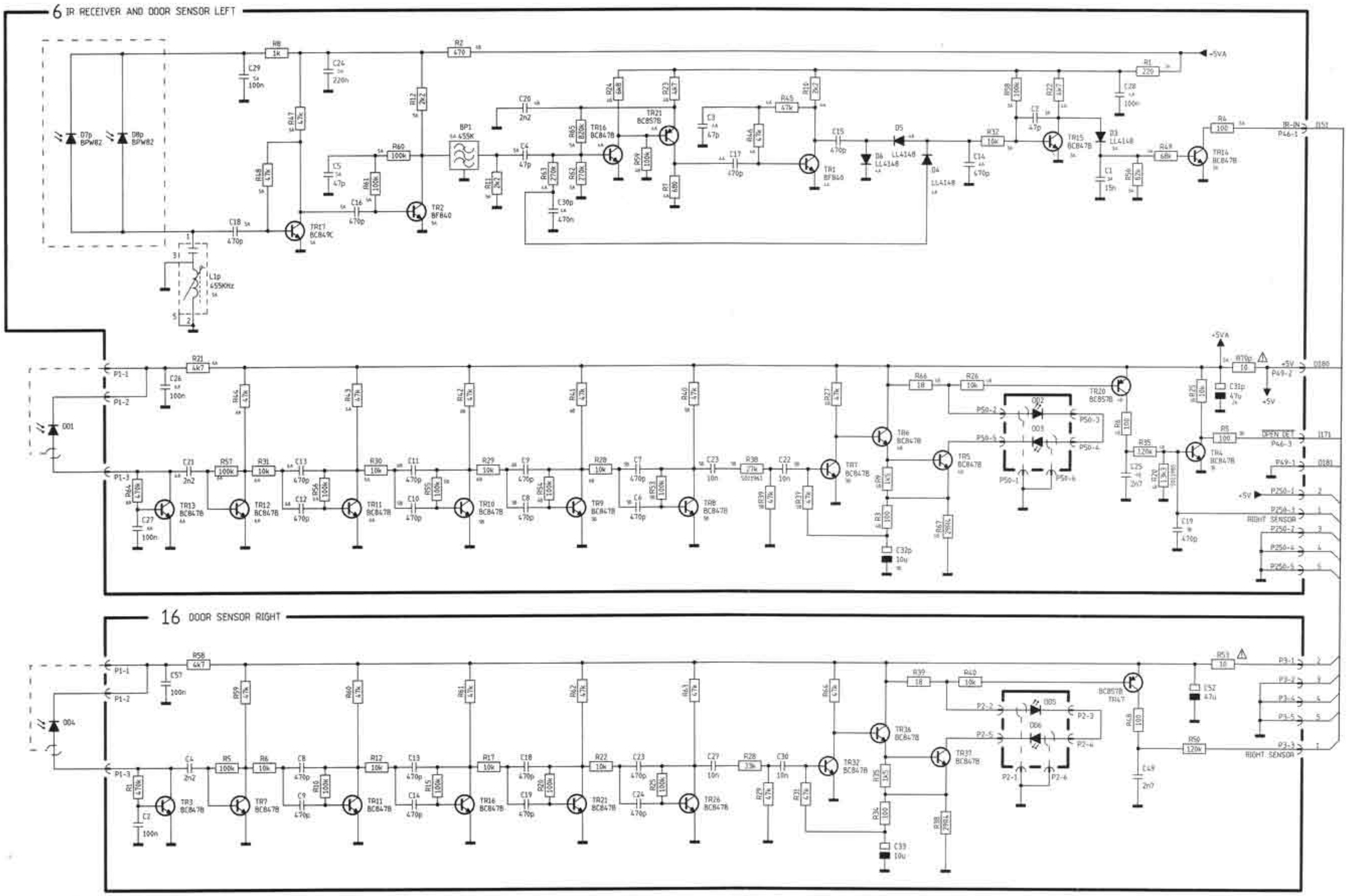
9001	3162519	Cover, left
9019	3162319	Cover, right

Parts not shown

6276499	Wire, 16P3 - 6P250
6276955	Wire, 16P1 - Plug with reception diode
6277118	Wire, 16P2 - Plug with transmitter diode
2013190	Screw, 3x8

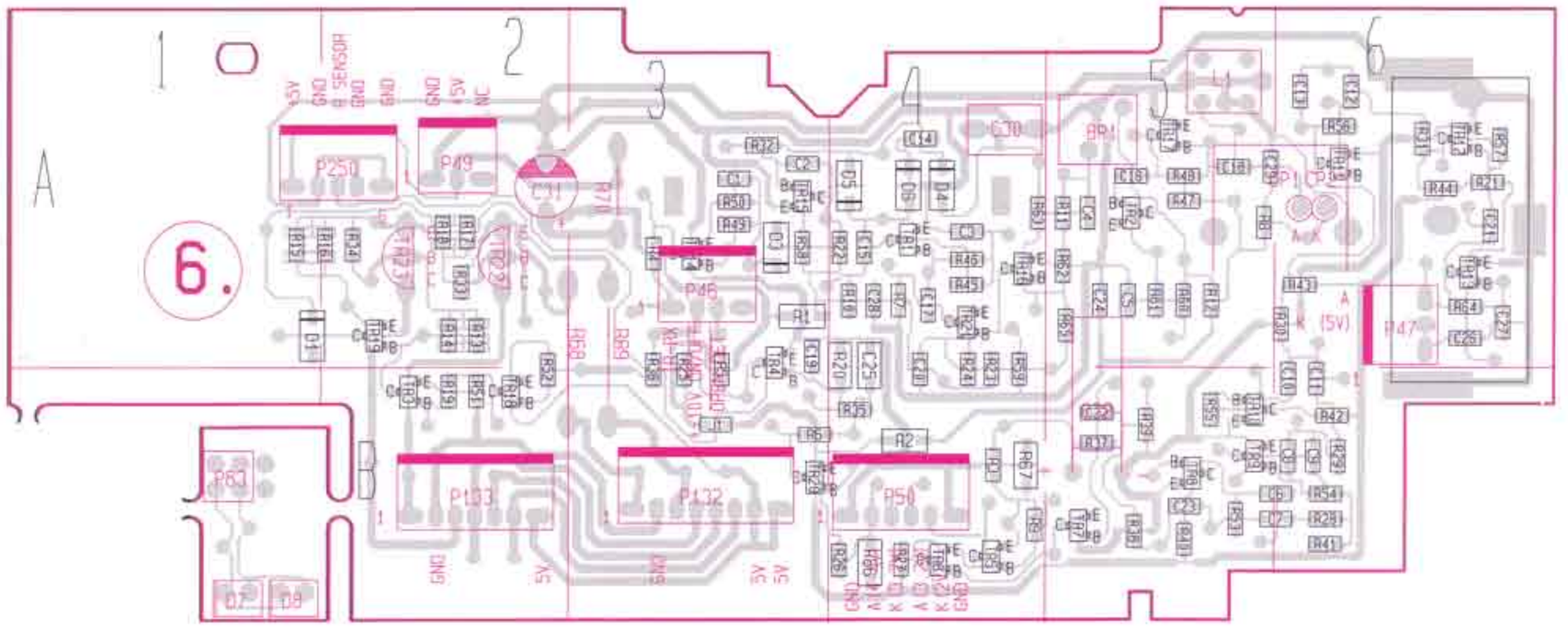
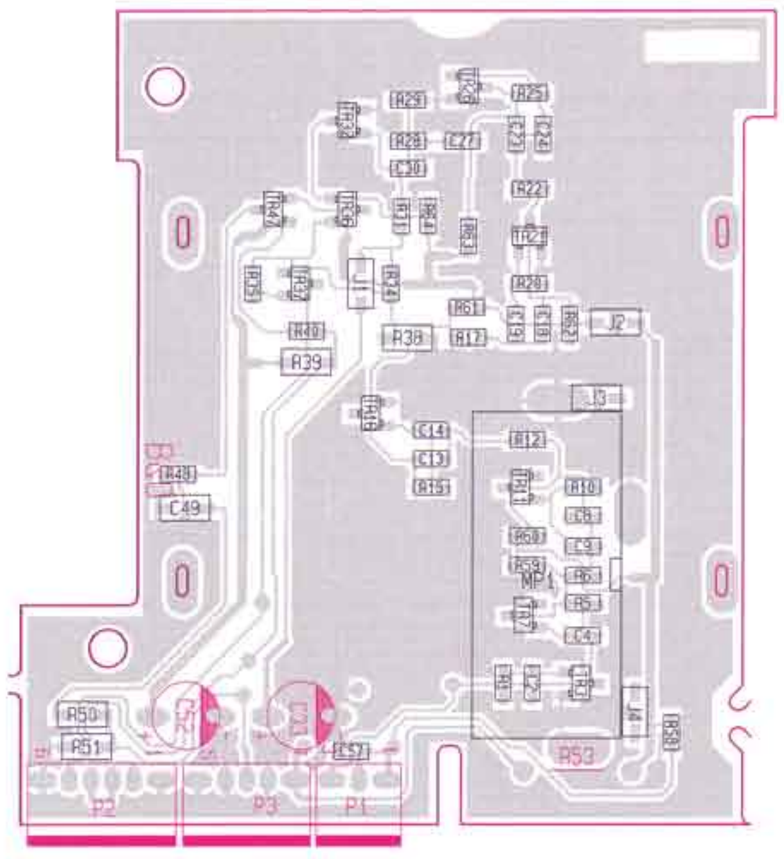
All other parts are identical with chapter 4.

DIAGRAM K IR RECEIVER & DOOR SENSOR



8 - 3
PCB DRAWINGS

PCB 6, IR receiver and door sensor, left



PCB 16, Door sensor, right